amateur radio

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NOVEMBER
1966

25c

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★

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FEDERAL COMMENT

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"ON GROWING UP"

Having long attained its majority, this Institute is, in many ways, still adolescent. In no sense is this comment to be taken as belittling the effort of past and present Honorary Officers of Divisions and Executive, but is intended to be a reflection on the status and relationship of the Federal body to the Institute as a whole. Let us look at the present situation, and consider a little theory.

It is not unusual or abnormal to find that organisations or societies have a Head Office, with administrative and executive staff, together with a reasonable income collected by subscription from its members. If there are Divisions or Branches, it is reasonable to assume that they are responsible for their own affairs, and follow generally the policies laid down by Head Office. The finance necessary for the conduct of Branch affairs may, in the case of an affluent Head Office, be provided on a per capita basis, or by a small levy on the members of the Branch.

This, then, is the normal course of events. But what do we find when we look at the Institute? We find a classical example of "six tails wagging the dog," or, to mix the metaphor, "the part being greater than the whole"; six Divisions all collecting a subscription and then forwarding the pittance of 30 cents a head to Federal Executive so that they can administer the complex and varied affairs of "The" W.I.A.

Surely the time has come when we must reorganise, and do some drastic revision of our Constitution. The amendments that have been proposed over the past years are steps in the right direction, but they do not go far enough. On the evidence available, it is obvious that efforts to make major changes are fraught with extreme difficulty because of problems in some quarters. If members of all Divisions rid themselves of certain inhibitions and aberrations, they must then find themselves free to consider the reorganisation of their Head Office—an Executive with a paid general manager or secretary and an editor for their national journal who does not have to squeeze in his social and family responsibilities with "A.R."

This Institute has some 4,000 members in all grades, and it is not on the level of the "Any Town Branch of the Society for the Care of Anxious Felines," nor is it at A.R.R.L. status.

The day of honorary officers in the posts of Secretary and Editor of the W.I.A. has ceased. If they still exist, then these officers are not fulfilling their obligations either to their families or the Institute.

The practical benefits of implementing these proposals need not be stated here at this time, and to a large extent, are self evident. They are limited only by the imagination and resourcefulness of the man employed, backed up by an efficient Executive, ensuring continuity of effort and implementation of all policies.

It would also provide the lie to those critics who level comments at the Institute to the effect that it does nothing and provides even less. In any event, it would have been proper to fire the bullets at the critic's own Division. After all, how much criticism can you give at 30 cents a head!

—P. D. WILLIAMS, Federal Secretary, W.I.A.

CONTENTS

Interference to Television and Radio Reception by Nearby Radio-Communications Transmitters

R. A. MURPHY, VK5ZDX, and R. S. GURR,† VK5RG*

ON frequent occasions the operation of nearby radiocommunications transmitters (e.g. Taxis, Police, Amateur, etc.) causes interference to the reception of Radio or Television programmes. In rare cases this interference may be due to deficiences in the interfering transmitter, but as the operation of these is controlled to rigid standards by the appropriate authorities, trouble from this source is not common. In such cases, no amount of work on the receiver will cure the interference, if the transmitter is radiating spurious signals in the Broadcast or Television bands.

The following types of interference may, however, confront a Radio or Television serviceman from time to time—cure may be effected in all these cases **at the receiver.**

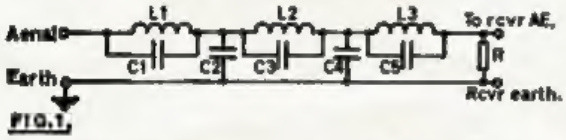

FIG.1.

BROADCAST INTERFERENCE

1.—Superheterodyne Spotting.

The harmonic radiation from the local oscillator of some broadcast sets —particularly transistor portables—is of a sufficient level to produce beats, with the nearby transmitter, that are on the same frequency as the local broadcast station. The beats are usually unnoticed on sets using an r.f. stage, where additional selectivity prevents the short wave signal from reaching the mixer stage.

A harmonic of the oscillator that falls 455 kcs. (the i.f.) away from the nearby transmitter frequency, will also cause a beat.

Example A:

1. Broadcast station frequency	1200	kcs.
2. Receiver oscillator frequency	1655	"
3. Oscillator 2nd harmonic	3310	"
4. Local transmitter frequency	4510	"
5. Beat between 3 and 4	1200	"

Example B:

1. Broadcast station frequency	1200	kcs.
2. Receiver oscillator frequency	1655	"
3. Oscillator 4th harmonic	6620	"
4. Local transmitter frequency	7075	"
5. Beat between 3 and 4	455	"

* 274 Diagonal Road, Oaklands Park, South Australia.

† 9 Richmond Avenue, Colonel Light Gardens, South Australia.

In general the mixing of the oscillator harmonics, and the unwanted signal occurs in the mixer of the broadcast receiver. The obvious cure is to stop one or other of these two signals from reaching the mixer.

The harmonic level of the oscillator in the receiver can be greatly reduced by lowering the applied voltage on the anode of the oscillator. It is wise to check the oscillator grid current as this may be excessive in some sets.

To prevent the unwanted high frequency signal reaching the mixer, better radio frequency selectivity (additional r.f. stage or the use of a low pass filter is necessary.

A typical low pass filter that will allow broadcast band signals to pass on to the receiver, but will attenuate all signals on frequencies above 1600 kcs., is shown in Fig. 1 (see "R.S.G.B. Amateur Radio Handbook"). L1, L2, and L3 should have adjustable cores and are tuned to that L1 C1 and L3 C5 resonate at 1.8 Mcs. and L2 C3 resonate at 3.6 Mcs. Component values are: C1, C5, 330 pF.; C2, C4, 360 pF.; C3, 27 pF. L1, L3, 21.45 microhenries; 50 turns No. 32 s.w.g. enamelled wire on ½ in. diameter iron slugged former. L2, 71.7 microhenries; 90 turns No. 38 s.w.g. enamelled wire on ½ in. diameter iron slugged former. R, 400 ohms ½ watt. The use of an outdoor aerial in conjunction with this filter is recommended.

Direct "image" interference often occurs from signals in the 1500 to 2500 kcs. band — small ship, police, Amateur, etc., transmissions can cause trouble. If only one frequency is involved, re-alignment of the intermediate frequency amplifier to an alternative frequency will remove this problem.

Often medium frequency transmissions in the 400-500 kcs. band are picked up direct in the intermediate frequency stages—once again re-alignment of the i.f. to an alternative frequency is the cure. If it is desired to eliminate one frequency only at the aerial of the receiver, single tuned circuit may be used as a "trap." The trap (Fig. 2) is usually a parallel resonant circuit, tuned to the frequency of the interfering signal, inserted in series with the broadcast aerial, as close to the set as possible. Alternatively, a series tuned trap shunted across aerial terminal to chassis is satisfactory.

2.—Audio Rectification.

If the audio content of the interfering station can be heard at all points of the dial (i.e. not tuneable), it is possible that the signal is being detected in the audio frequency section of the receiver. To confirm this, the normal aerial of the receiver should be disconnected and any change in the level of the interference noted.

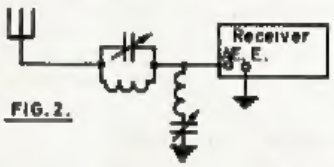

FIG.2.

If the interference ceases, then installation of suitable traps in the aerial lead may provide a satisfactory cure. If it persists, then some work will have to be carried out on the audio circuits in the receiver.

This same effect will sometimes be noticed in radiograms even when used as amplifiers only—i.e. with the tuner turned off. This interference is caused by rectification, usually at the control grid of the first stage in the audio amplifier—i.e. the stage following the detector. Ofter the trouble persists irrespective of the volume control setting.

To overcome this form of rectification, it is necessary to prevent radio frequency energy from reaching the grid of this audio stage. Standard techniques for curing this are as follows:—

1. Reduce grid load resistor to 2 or 3 megohms and bypass with a 250 pF. condenser. (See Fig. 3.)

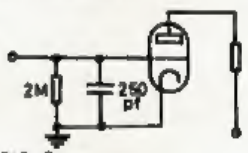

FIG.3.

2. Insert 50,000 ohm resistor between grid resistor and grid as close to grid pin as possible—in addition bypass with 100 pF. condenser. (Fig. 4.)

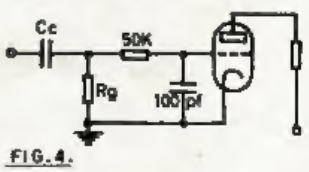

FIG.4.

3. In some sets, audio is coupled from the detector to the first audio stage by means of cathode injection. In this case, bypassing the cathode resistor with a 100 pF. condenser will be satisfactory.

In a number of cases, similar treatment to the following audio stage has been necessary to completely eliminate the trouble.

TELEVISION INTERFERENCE

1.—Front End (R.F. Overload).

Because of the wide band of the t.v. station transmissions the front-end (r.f. stage) of a t.v. receiver is usually quite broad in response (minimum of 7 Mcs.). As a result, the attenuation presented to signals on frequencies on either side of the t.v. channel is not very great.

This feature is often the reason why a strong local station, operating on a nearby frequency, can cause interference to a more distant t.v. transmitter.

Often transmissions on frequencies quite remote from the t.v. bands may cause interference due to the same effect. In strong t.v. signal areas, the t.v. set is frequently overloaded by the t.v. transmitter often to the extent where r.f. patterning, loss of synchronisation, pulling, etc., occur. This is because the a.g.c. system of the set is not correctly adjusted or in some cases not designed correctly.

In some cases, the overloaded set may produce perfect pictures, but under the influence of a nearby transmitter, r.f. patterns will be produced. As an example, an Amateur transmitter operating on 3.5 Mcs. caused interference to all channels on strong local t.v. transmissions. The transmitter was tested and it was confirmed that there were no spurious radiations in the t.v. bands. When viewing the t.v. receiver with the 3.5 Mcs. transmitter running, but the t.v. stations off the air, no interference was noted on any channel.

When a t.v. transmitter commenced operating, an interference pattern was produced on that particular channel. The cure to this trouble proved to be the insertion of a 20 db. resistive attenuator in the aerial lead-in, at the aerial terminal of the set, but often adjustment of the receiver a.g.c. control would be adequate.

A large number of cases have occurred where taxi services, Amateur stations, police transmitters, etc., have caused interference to neighbouring television reception. A number of cases have been cured by the installation of traps, tuned to the unwanted frequency, fitted to the aerial terminals of the set, but a few required installation of the traps at the feeder terminals on the t.v. turret.

The trap circuits usually consist of a small coil and a condenser in series connection (Fig. 5), but parallel tuned combinations may be used in difficult cases (Fig. 6). Sometimes a combination of both series and parallel resonant traps is necessary, as shown in Fig. 7.

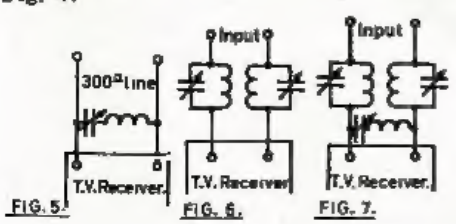

FIG. 5. FIG. 6. FIG. 7.

Traps using 300 ohm ribbon quarter wave stub lines, and closely coupled tuned circuits made from 300 ohm ribbon in conjunction with a small trimmer condenser are also popular. Details are to be found in the various references mentioned below.

The effect of overload may vary from complete blocking of the screen through to fine wire mesh patterns. Not all r.f. patterns appearing in a t.v. screen need be caused by a nearby transmitter. Cases have occurred where the r.f. amplifier of the receiver itself has "taken off" in self oscillation and produced spurious signals throughout the r.f. spectrum. In most cases of this nature, replacement of the amplifier tube, bypass condenser, etc., in the r.f. statge will produce a cure, but often the oscillation is due to incorrect loading on the grid of the valve caused by an open circuit aerial feedline.

Audio grid rectification, as listed under "Broadcast Interference," applies equally to the t.v. set.

As a general rule, overload interference may be overcome by:—

1. Overlap t.v. ribbon 2-4 inches.
2. Fit a suitable trap if the interfering signal is in the v.h.f. range.
3. Instal a "high pass" filter if intering signal is below 30 Mcs. (see Fig. 8).

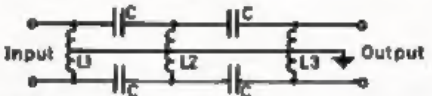

FIG. 8.

C equals 20 uufd.
L1 equals 40 turns centre earthed 30 gauge enamelled close wound on ⅛ inch diameter knitting needle.
L2 equals 22 turns centre earthed 30 gauge enamelled close wound on ⅛ inch diameter knitting needle.
(Similar high pass filters are available commercially—e.g. "Austenna".)

AERIAL INSTALLATIONS

No radio or television receiving installation is complete without the inclusion of a "good" outside aerial. It is recognised that most modern sets are sensitive enough to give satisfactory reception with little or no aerial connected at all, but as the amount of signal induced into the set then depends more on the nature of screening and reflecting materials in the adjacent area, it is obvious any stray r.f. energy fed back into the mains (or induced into them) by nearby transmitters, will be at a level sometimes approaching that of the received signal.

The erection of a good outdoor aerial in a large number of cases has often overcome extremely aggravating cases of interference. For broadcast reception a single insulated wire running from the eaves or gable of a house to a convenient fruit tree, and oriented at right angles to the aerial of the nearby transmitter is adequate.

For television use, the "rabbits ears" or similar aerials mounted on top of the t.v. receiver rarely give satisfactory reception under normal circumstances. Flickering due to body reflections and passing vehicles, etc., are overcome when these types are replaced with a good chimney/roof mounted outdoor type. The installation of a good quality aerial inside the roof of the house where it usually sits 6 to 12 inches above interference conducting power wiring is not satisfactory, and usually costs nearly as much as the accepted outdoor type.

Some broadcast sets are designed to work with very short aerials, and often the use of too much aerial may tax the a.v.c. system of the receiver. To overcome this and maintain the signal - to - interference improvement, overload may be corrected by cutting the aerial lead about 12 inches from the receiver and twisting the two wires together again. Alternatively, a small 2 or 10 pF. coupling condenser may be adequate.

The problem of a.v.c. in t.v. receivers can be overcome by adjusting the appropriate controls or alternatively by the installation of an attenuator. A 20 db. attenuator for installation in 300 ohm line at t.v. frequencies can be made by connecting some quarter or half watt resistors as shown in Fig. 9.

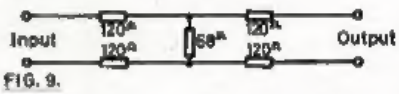

FIG. 9.

In the field, overlapping 300 ohm ribbon by 3 or 4 inches and locking the overlap with plastic adhesive tape, may be found satisfactory.

Most t.v. sets are designed to work with 300 ohm feed and consequently with resonant aerials. It is difficult therefore to expect perfect reception when a Channel 3/6 aerial combination is used to receive Channels 1/8—standing waves on the feedline can produce ghost signals and resultant "smearing," etc.

In many fringe areas, "booster" amplifiers have been installed to assist long-distance reception. Some are broadband transistorised types and are more pre-amplifiers than pre-selectors —i.e. they generally amplify everything they receive, on all frequencies. Local transmissions from nearby t.v. stations, radio-telephone transmitters, Amateurs, etc., can overload these pre-amplifiers, sometimes even though the amplifier may not be switched on, and the resultant mixture of signals fed down the feedline to the receiver.

The elimination of this type of amplifier from the aerial system can do a lot to help overcome difficult interference problems. In many cases the cause of r.f. patterning on neighbouring t.v. screens has been found to be due to this type of transistorised masthead amplifier operating in a state of self oscillation.

Servicing of an existing aerial or earth system can frequently help overcome interference problems. Loose corroded joints cause rectification and resultant mixing or re-radiation and harmonic generation. The insertion of a diode in series with an aerial is an excellent way to cause deliberate broadcast or television interference—have you considered the likelihood of crystal sets used by youngsters in the near vicinity?

Some interesting comments on the influence of aerials in broadcast reception may be found on pages 907 and 908 of the Fourth Edition of the "Radiotron Designers' Handbook."

(Continued on Page 6)

"THE THING"—TRANSISTORISED

AN EXPERIMENTAL SIDEBAND EXCITER

K. A. KIMBERLEY, VK2PY*

THESE articles are the result of a series of adventures the author experienced in the development of a transistorised sideband transceiver. How I came to be sucked into this project is not, even at this stage, really clear to me.

However, looking back over the past few months, this is how I think I was hooked. The old "idiot box" was, after all these years, fast running out of picture tube. After much procrastination, a re-gun was purchased and fitted. Much joy! We now had sound and picture again. With that chore out of the way, I thought it time something was done about my lagging interest in Ham Radio.

The first thing was to catch up on my neglected reading, yes, but how many times can you read the same jazz? Then one warm evening I casually glanced into the old junk box and my! There among the treasure trove of goodies was a box of low frequency crystals. Now what could be done with them Ah, an idea came to mind.

Being the proud owner of a c.r.o. and a sweep generator (made to keep the one-eyed monster serviceable), I foolishly decided to play around with a crystal filter. Thinking to myself, "a few nights' fiddling around would soon convince me of the folly of it all and then I would have a good excuse to purchase a filter."

However, on this occasion "Finnagles Law†" exerted itself. The filter worked right from the beginning and this is where I really fell for the "three card trick." Could my initial success have been a fluke? As a test, a second filter was knocked up and worked just as well.

Another experiment was now tried. The filter was re-aligned using channels 0 and 1, then channel 0 was changed to 2 and the filter re-adjusted. This took only about 60 seconds, next channel 3 was substituted for channel 1 and so on until I ran out of crystal pairs at nos. 29 and 30. In every case re-alignment from one pair to the next needed no more than about 60 seconds.

Such easy success encouraged me to go further, so then a two-section filter was constructed. Very little extra trouble was encountered here, although this was probably due to having pre-aligned the stages separately first before attempting the overall alignment.

So far OK, but of what use is a filter on its own? Logically it has to be incorporated into some equipment. Still being in the mood for experimentation, it was decided to make a transistorised sideband exciter which at some future date could be readily converted to a transceiver.

Judging by my luck previously, with the filters, this should have been a piece of cake. You know, a few transistors, a handful of small components and a 9 volt battery. Oh yeah! Three months and many cans of ale later, good, clean sideband is being produced on 3.5 Mc.

In following articles I will describe the exciter in detail as well as a brief run-down on the sweeper. If you do not own a c.r.o. and sweeper, don't despair as it is possible to use a modified g.d.o. The use of a modified g.d.o. or other bandspread oscillator is rather tedious and not to be recommended.

An explanation of the block diagram now follows. All transistors, with the exception of those used in the audio stages, are germanium PNP types with cut-off frequencies in the order of 14 Mc., i.e. OC44 types. The audio is a two-stage affair consisting of a microphone amplifier capacity coupled to a single ended output stage. The resulting audio is transformer coupled to the balanced modulator.

The balanced modulator uses two transistors having their bases in push-pull for the audio, the exmitters in parallel for r.f. and the collector push-pull for r.f.

The carrier oscillator is a common exmitter crystal control oscillator and drives the exmitters of the balanced modulator. The resulting oscillator output is then fed into the two-section filter. A common exmitter amplifier is used in each section of the filter. Great care must be exercised here to prevent overload and hence bad signals. These amplifiers may not be needed in a straight exciter. However, as this unit is primarily intended for transceiver work, it is felt that these amplifiers would be necessary for receiving. The isolation provided by the transistors is helpful in alignment.

The resulting signal is now s.s.b. and now requires heterodyning to the Ham bands. Mixer circuits are notorious for the spurious signals they produce, hence it was decided to use a balanced type in an effort to reduce the spurious. As good results had already been had with my balanced modulator, it was only natural to use the same circuit configuration.

The output from the filter is single ended and, rather than make a new output transformer, a phase-splitter

(Continued on Page 8)

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† Finnagles Law," reduced to its simplest form, states: "If anything can possibly go wrong at any given time, it most certainly will do so."

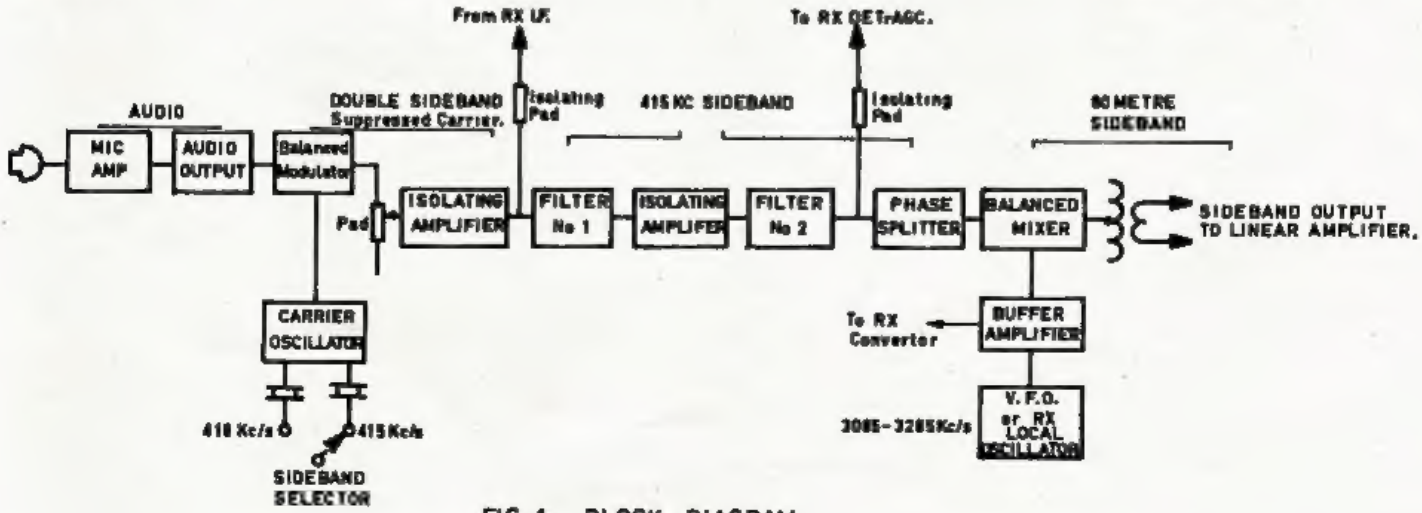


FIG. 1. BLOCK DIAGRAM.

Note: Carrier frequencies rounded out for convenience. Actuals will be quoted in following articles.

Block diagram of an experimental sideband exciter.

A High Stability V.f.o. for Receiver or Transmitter

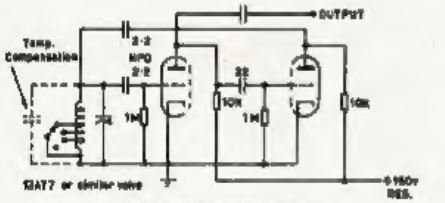
GREG. JOHNSTON, B.Sc.

In a recent article (January, 1966) I made brief reference to the possibility of using a V.F.O. in conjunction with the converter described, employing a fixed i.f. in the 3 Mc. range.

This V.F.O. has finally been constructed and is now in use in conjunction with a crystal filter (home-brewed) on 5327 Kc. For the benefit of any fellow s.w.l.'s, this is the set-up used in the R.D. Contest just past—the converter in a crystal locked form was the heart of the gear used in the 1965 R.D. Contest.

As the more avid readers will realise, the V.F.O. here is none other than the Franklin, not a very modern circuit but one which does not seem to enjoy a great deal of popularity at present, possibly because its output is not as high as some other types. However, for the "Like New Mexer," output is optimum with good conversion gain and low mixer noise.

The principal advantages of the Franklin oscillator are that a two-terminal coil may be used and that since voltage levels are comparatively low (a mere 70 volts h.t. on the plates) heat induced instability and drift is minimised. When this is coupled with the great inherent stability of the circuit, it could be expected that such a V.F.O. in either receiver or transmitter would be equal to the standards of performance and stability demanded by the present state of "the art." This is, in fact, the case as may be illustrated by my own experience.



HIGH STABILITY VFO

As mentioned earlier herein, using an i.f. of 5327 Kc. it was necessary to use the V.F.O. on a frequency of 9 Mc. approx. for both 20 and 80 metre reception. Taking the bull by the tail, the V.F.O. was constructed to oscillate on a fundamental frequency of this order and the results on first switching on are well worthy of mention. With a total of 39 pF. N.P.O. across the tuned circuit excluding the gang, drift from warm up was a mere few Kcs. in an hour. Compensation was very simply accomplished by placing 1.8 pF. of N750 ceramic condenser across the coil, at which stage drift was negligible after 5 to 10 minutes' warm up as shown by beating against a crystal frequency standard reference for an hour.

What about 40, 15 and 10 metre reception? Well, this is very simply accomplished by progressive shorting of pre-selected coil taps to ground so that the circuit oscillates at 12 Mc. for 40 metres and 16 Mc. and 23 Mc. for 15 and 10 metres respectively. In other words we have a single coil grounded at one end usable on all five bands simply by tapping the inductance at the appropriate points and making provision to switch them to earth as required to permit resonance at the higher frequencies.

As with all frequency determining equipment, mechanical rigidity in construction will pay handsome dividends in performance of the finished article. In the present case this is the only "critical" component necessary as all condensers used with the exception of the 1.8 pF. N750 temperature compensating and the tuning gang, which was a ceramic type, all others were only ordinary NPO ceramic, but do not attempt to use those with a negative or positive temperature coefficient in the coupling from the "hot" end of the coil.

YO AWARDS

YO-15 BY 15—WORKED 15 YO ON 15 MX

There are needed 15 two-way contacts with 15 YO stations on 15 mx band (21 Mc.) after 1/1/60. A YO station may be worked but once, regardless of the mode of the contact.

YO-20 Z—WORKED ZONE 20

This award is issued in three classes, for contacts made after 1/1/60 with Amateur stations of the countries belonging to Zone 20:

Bulgaria (LZ), Crete (SV), Cyprus (5B4, ZC4), Dodecanese (SV), Greece (SV), Israel (4X4), Jordan (JY), Lebanon (OD5), Rumania (YO), Syria (YK), Turkey (TA) as follows:

Location Zone	Minimum number of countries worked Class I.	Class II.	Class III.
15, 16, 20, 21, 34	10	8	6
14, 17, 22, 23, 33, 35, 36, 37	8	6	4
All other Zones	6	4	2

A YO contact is obligatory in all cases.

YO-20 BY 20—WORKED 20 YO ON 20 MX

There are needed 20 two-way contacts with 20 YO stations on 20 mx band (14 Mc.) after 1/1/64. A YO station may be worked but once, regardless of the mode of the contact.

"THE THING"—TRANSISTOR'D

(Continued from Page 5)

was added between the filter and the balanced modulator. The phase-splitter worked like a charm and, at this stage, does not need further comment.

In common with most transceivers the receiver local oscillator serves as the transmitter v.f.o. On receive this oscillator mixes with the desired signal to produce an intermediate frequency which is made to be the same as our sideband generator. On transmit the reverse procedure is used, i.e. the generated low frequency sideband is mixed with the local oscillator and VOILA sideband output on the receiving frequency.

Later, if found desirable, I will add a separate v.f.o. to make it possible to transmit on frequencies other than that being received. A buffer was added between the local oscillator and the balanced mixer. This was done firstly to prevent possible frequency changes when going from receive to transmit, and secondly to boost the level going into the balanced mixer. High levels of oscillator signals here make for better sounding sideband.

The generator outlined above produces 1.5v. of 80 metre sideband. This is with the output unterminated. Enquiries are currently being made regarding price, etc., of suitable power transistors before a decision is made on the construction of a suitable linear amplifier. The project, being of an experimental nature, was built breadboard style. Each of the main sections were made on board 6 in. x 2½ in., and when going to my satisfaction, mounted on a common base plate.

Matrix board could have been used, however, my "Scotch blood" would not allow this. Instead I used scrap 1/16 in. Laminex (bakelite sheet would be OK), drilled and eyeletted where required. Some day I hope to fit the whole into a nice-looking cabinet.

Well, chaps, that's about it for now, hope you managed to sort out the g.g. from the garbage. Next month I hope to rave on about filters and sweep generators.

INTERFERENCE TO T.V. AND RADIO RECEPTION

(Continued from Page 3)

EXTERNAL CROSS MODULATION

The major part of these notes has been concerned with some comments on the problems of intermodulation of signals within a receiver, and the most suitable cures. Unfortunately, from time to time cases occur where the intermodulation is external to the receiver, and location of the source is a difficult problem.

The methods and cures for this are too numerous to mention at this stage, but if an external source is suspected in any case our readers may be concerned with, check the following domestic sources:—

1. Corrosion on mains earth clamp.
2. Dry joints or loose clamps on a.c. mains entry to premises.
3. Loose fuse holders at main power board.
4. Poor or corroded junctions in conduits in electrical system.
5. Power earth wires in loose contact with gas or oil pipes.
6. Corrosion at downpipe entry into rainwater tanks, etc.
7. Gas and chip bath heater flues not completely earthed or isolated from iron roofs.
8. Presence of nearby crystal sets or t.v. masthead amplifiers.
9. Any suspected corrosion between two dissimilar metals of large dimensions.

REFERENCES

"Television Interference" (Second or third edition), Remington Rand, Laboratory of Advanced Research, South Norwalk, Conn., U.S.A.

"Television Interference. Its causes and cures," by Phil Rand, 1958.

"Radio Amateur's Handbook," A.R.R.L.

"Amateur Radio Handbook," R.S.G.B.

"How to Locate and Eliminate Television Interference," by Rowe (Rider Publication).

"Radiotron Designer's Handbook," R.C.A.

A Transistorised Amateur Band Receiver

PART FOUR

HAROLD L. HEPBURN,* VK3AFQ

THE i.f. strip of the Moorabbin project receiver, while not difficult to construct in the absolute sense, was somewhat more complex than the previous units (audio and b.f.o) and this was reflected in the results obtained when some 30 completed units were tested.

The test procedure was divided into two parts: —

(a) Measurement—by the participant —of the current drain of the various stages.
(b) Frequency alignment and sensitivity checks—using the test set up of Fig. 9—at a project meeting.

CURRENT TESTING

Each participant was asked to measure the following currents:—

1. The basic current—i.e. the current drawn by the unit with all collector feed resistors disconnected.
2. The no-signal current drawn by the OC44 detector stage (measured at the cold end of the 5.6k collector resistor).
3. The no-signal current drawn by the OC72 a.g.c. amplifier.
4. The no-signal current drawn by the second AF115N i.f. stage.
5. The no-signal current drawn by the first AF115N i.f. stage.

Results obtained are listed in Table 1.

Test No.	Stage	Average current mA.	Range of results mA.
1	Basic	0.26	0.20-0.30
2	OC44	0.03	Nil-0.06
3	OC72	0.18	0.15-0.20
4	2nd AF115N	0.78	0.61-1.00
5	1st AF115N	0.90	0.82-1.08
Total current (av.)		2.15	—

Table 1.

The average of the results was much as found during the testing of the prototypes, but the range of results was a little wider than expected. However, this spread did not in any way affect the sensitivity of the units.

One omission in the instructions for testing caused some confusion and it is now pointed out that it is not possible to measure the current drain of the two AF115N stages until the 10k resistor in the collector of the OC72 is soldered into place.

Consideration of the results obtained indicates that the OC72 is insufficiently biased back and that a modification of the bias network to reduce the standing current might improve the a.g.c. action a little.

It is interesting to note that unless the currents indicated above were found, then the unit was not working properly and some trouble shooting was necessary before frequency alignment was carried out.

ALIGNMENT AND A.G.C. ACTION

The test set up of Fig. 9 was used. Each board was prepared for testing by:—

(1) Bridging across the r.f. volume control.
(2) Bridging the input from the b.f.o.
(3) Bridging the a.f. output leads with a 10k resistor.

A variable signal centred on 455 Kc. was applied from a low impedance generator via a double-wound test transformer made for the purpose. It had a step-down ratio from tuned winding to link of about 10/1. A 20,000 o.p.v. multimeter set on its 10 volt range was hung between the a.v.c. line and ground as a resonance indicator.

The great majority of units came on to frequency without trouble and performed well. Using the first movement of the voltmeter as an indication, it appears that the sensitivity of the unit is around 30 μV. Some individual units gave first indications as low as 10 μV., whilst the least sensitive appeared to start a.g.c. action at 50μV. In all cases the a.g.c. was still functioning at the maximum output of the generator, i.e. 250 mV.

In all, six units did not work at first. In two cases the OC44 or OC72 transistors had been incorrectly wired, in another three cases the coils were incorrectly wound, and in one case violent regeneration was encountered. The reasons for this last problem have still to be determined, but in view of the docile behaviour of all the other units, a sub-standard component is suspected.

In addition to all 30 units tested another 40 are known to be under construction. Verbal reports to date indicate that they are performing satisfactorily.

STAGE 5

The R.F. Mixer Board

The final stage of the project receiver is the board containing the r.f. amplifier (an AF114N), the mixer (an AF117N) and a top coupled pair of i.f. transformers feeding the i.f. strip. The circuit diagram is given in Fig. 8.

R.F. Stage

The AF114N r.f. amplifier is used in the grounded base configuration. Those who have read the excellent article by VK3ZRY in the October issue of "A.R." will already know the advantages of this configuration, i.e. low input impedance, high output impedance and comparative freedom from feedback.

The input coil, L12, is wound on a Ducon Q2 miniature pot core and the tuned winding consists of 13 turns of 29 B. & S. wire, tapped at 3 turns

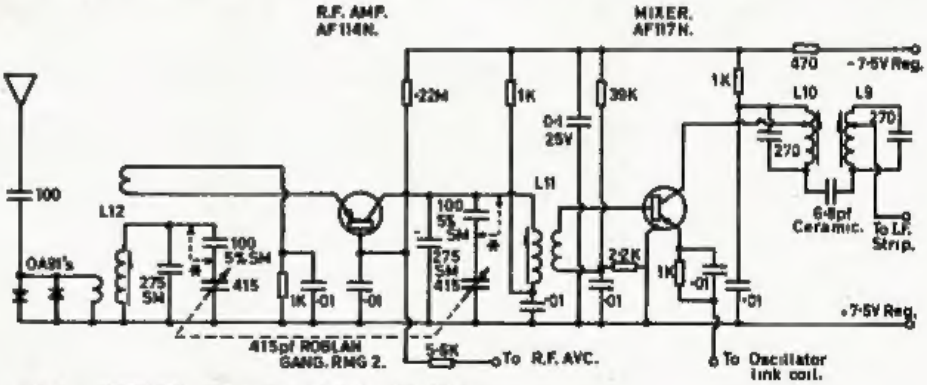


FIG. 8. VK3APC RECEIVER - R.F. & MIXER STAGE.

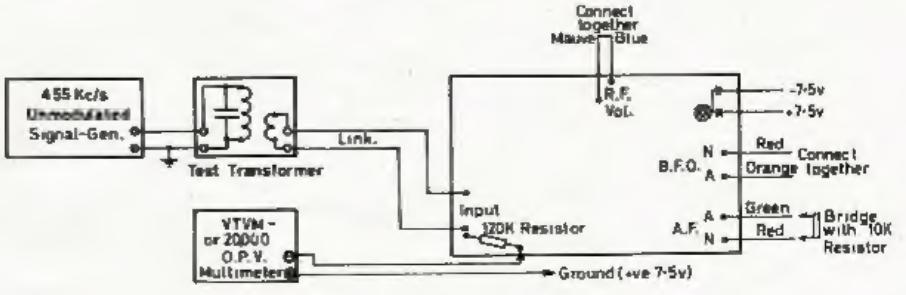


FIG. 9. TEST SET FOR I.F. STAGE.

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for the antenna. The link winding to the emitter of the AF114N has 1¼ turns of the same wire. The 270 pF. fixed condenser across the coil supplies most of the tuning capacitance required, while the variable part is provided by one section of a Roblan 415 pF. RMG2 which has a 100 pF. fixed capacitor in series with it to restrict the tuning range.

A.v.c. is applied to the r.f. stage via the 5.6k resistor in the base circuit, while back-to-back OA91 diodes are used across the input to provide some measure of front-end protection.

Mixer

L11, the interstage coupling transformer, is also wound on a Ducon Q2 miniature pot core. The tuned winding again consists of 13 turns of 29 B. & S. wire. The base link has 1½ turns of the same sized wire. The second section of the 415 pF. Roblan two-gang is also padded with a 100 pF. capacitor to restrict the frequency range.

Oscillator injection is via the 1000 ohm and 0.01 μF. 25 volt condenser in the emitter circuit.

I.F. Transformer

L9 and L10 are the two top-coupled transformers. Each is wound on a Ducon Q1 miniature pot core and each consists of an 84-turn winding of 36 B. & S. wire. In L10 the collector tap is 22 turns from the cold end (i.e. —7.5v. feed end) while L9 is tapped at 12 turns from the cold end.

As in the four preceding stages the whole unit is built on to a printed circuit board specially made for the project.

At some later date—probably in the new year—the results obtained when testing the completed receivers will be published. Also around that time it is hoped to publish details of the h.f. converters now being designed. At a still later stage—and if warranted by the demand—the Moorabbin Club will be following this project with a side-band generator. Two such units are now being developed—one on 455 Kcs. using a mechanical or ceramic filter, and one on 9 Mcs. using a four-crystal filter.

This article then concludes the first phase of the Moorabbin project.

Although for convenience the writer's name has appeared on this series of articles, it must be emphasised that the running of the project has been a team affair. Bob VK3AKJ, Ken VK3AFJ, Bert VK3AAF and Col VK3XV have been assisting on the procurement side, Neil VK3ZRT and Ken VK3AKK have been the main strengths on the technical and "trouble-shooting" front, Eddie VK3EM has spent countless hours on the many drawings involved, Jim VK3KE has provided the hundreds of drawing reproductions required, Peter VK3XK has borne the full weight of setting up and duplicating the instructions, while Ron VK3RN and Lindsay VK3ZNS have spent many evenings making up the kits.

The project as a whole has been of far greater interest than was originally envisaged. When first mooted the committee estimated that, perhaps, 20 members would take part. At the moment there are no less than 73 participants from all states and a couple from ZL.

What's next?—N.F.D. of course!

☆

NATIONAL FIELD DAY RULES

The Rules of the Field Day of 11th and 12th February, 1967, will be the same as those of 1966, which were published in "A.R." of December, 1965, except for:—

(1) Crossmode operation is permitted, and will count for scoring purposes.

(2) Fixed Stations working Mobile/Portable will be eligible for Certificates.

☆

AMERICAN CALL BOOKS

The Federal Treasurer of the W.I.A. has a small number of copies of the American and Foreign Call Books for sale—price $2 each. Send application without money (in case a ballot is necessary) to Federal Treasurer, W.I.A., c/o P.O. Box 36, East Melbourne. Also state if you wish to have your application held over if not successful this time.

TRANSISTOR AMPLIFIER DESIGN

PART THREE

R. L. HARRISON, VK3ZRY*

THIS article will cover class A, large signal, audio amplifiers. I will first discuss classes, limitations and requirements that have to be considered before setting out a design method. The method itself is, of necessity, graphical and thus, before attempting to design an audio power amplifier, you must obtain the base and collector characteristic curves. That is I_c versus V_{CE}, I_c versus V_{BE}, and I_B versus V_{BE}. Some basic knowledge of transistors and transistor terminology is assumed.

CLASSES OF AMPLIFIERS

Amplifiers, r.f. or a.f., are divided into four classes. These classes are defined by the operating conditions under which the amplifiers operate. The four classes are designated A, AB, B and C. For audio work we will be interested in classes A, AB and B.

Class A: The base-emitter bias is set so that collector current flows at all times.

Class B: The base-emitter bias is set to approximate collector cut-off so that collector current flows for only 180° of the input cycle.

Class AB: The base-emitter bias is set between class A and class B. Collector current flows for more than 180° but less than 360° of the input cycle.

Class A amplifiers are used where linearity or freedom from distortion is the main requirement, but efficiency is low. Typical efficiency for transistors is from 20% to 35%. Maximum theoretical efficiency is 50%.

Class B amplifiers are extremely efficient and provide high power output. With transistors, the inherent linearity of the collector characteristics gives low distortion figures not normally encountered with tubes. Efficiency is typically 70 to 75%, which makes this configuration very attractive for mobile. Maximum theoretical efficiency is 78.5%.

Class AB amplifiers give more power output than class A but less distortion and power output than class B. With transistors, the difference in distortion figures between class B and class AB is so small as to be only a minor criterion. Typical class AB efficiences approach 60%.

LIMITATIONS AND REQUIREMENTS

For audio work only, class A amplifiers can be used in a single ended stage. Class B must be used in push-pull arrangements because a single stage would have severely distorted output as the transistor is conducting only over portion of the input cycle.

For all classes of operation the power output is limited by:—

(a) Maximum power dissipation rating (P_c max.). This depends on the ambient temperature and design of the cooling system.

(b) Maximum collector to emitter voltage ratings (V_{CE} max.). This rating is generally due to the zener breakdown of the collector-base junction.

(c) Maximum emitter current rating, or more usually, maximum collector current rating (I_c max.). This depends on the fall-off of h_{FE} with increasing emitter current.

In designing an amplifier we must check that none of these ratings are exceeded at any time.

One of the main requirements of audio power amplifiers is thermal stability. In most cases (low power) this is readily obtained by normal biasing methods similar to that outlined in Part 1. The exception here though is that the bias components' bleed current is relatively high and the emitter resistor R_E is very low or non-existent. By-passing of R2 or R_E is not often encountered as little signal is lost in these components and by-pass capacitor values would be impractical.

Complementary to thermal stability is the prevention of, and compensation for, temperature rise. A good heat-sink and adequate cooling facilities should be provided, keeping in mind the power involved. Temperature compensation will be discussed fully later.

CLASS A DESIGN

Fig. 1 gives the circuit suitable for class A, low to medium power applications. Note that it is a single ended stage—push-pull comes later.

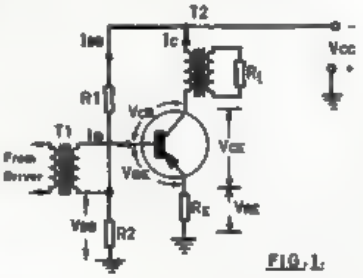


Fig. 1.

The first thing you have to do is obtain several sets of different transistor characteristics. Now, assuming you have several suitable base and collector characteristics, you can follow the procedure set out below.

1. Choose peak power output (P_o) required to be delivered to the load and add 20% (one-fifth) to account for losses.

2. Calculate P_c max. from following equation: P_c max. = Z P_o + ⅛ P_o.

3. Choose V_{cc} (collector supply voltage). You will probably already know what this is to be. Check that V_{cc} is greater than or equal to ½ V_{CE} max. (where V_{CE} max. is to be taken from manufacturer's data).

This is because the instantaneous collector voltage swings to twice V_{cc} on signal peaks.

4. Now choose your transistor, keeping in mind the limitations set out above. The P_c max. value found in No. 2 above should be equal to or, preferably, somewhat less than P_c max. of the transistor you select. This criterion will be your deciding factor. Gain of the transistor is another consideration and I will leave that up to you.

5. Using the value of V_{cc} chosen in No. 3, calculate your working point (quiescent or Q-point) collector current (I_q) from this equation:—

$$I_q = \frac{Z\ P_o}{V_{cc}}$$

where I_q is in amps.
V_{cc} in volts.
P_o is the power output required plus 20%, in watts. From now on P_o is this value.

6. The junction of I_q and V_{cc} on the collector characteristics determines your Q-point (see Fig. 2). Now draw a straight line from 2 × I_q through the Q-point to 2 × V_{cc}. This is your a.c. (signal) load line which will give the power output you desire, unless of course you have made a mistake. Unfortunately, mistakes made here will not be discovered until later.

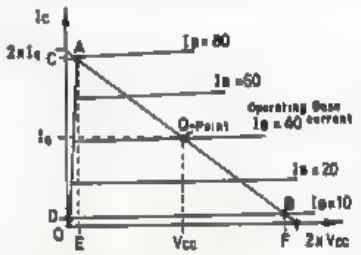


Fig. 2.

7. Determine your operating base current (I_B) at the Q-point.

The Q-point will come near or on one of the collector characteristics which will be marked with a certain base current (see Fig. 2). If the Q-point falls on a line, then you are lucky; the value marked on this line will be your operating base current. If the Q-point is between two lines, you will have to figure out approximately what your base current is—don't be too accurate, it is not necessary.

8. Determine your base-emitter voltage V_{BE} from the base characteristics (I_B versus V_{BE}), see Fig. 3.

Look up the I_B axis to the value of I_B found in No. 7, project a line across to the appropriate curves for different temperatures—assume T_c = 25°C. unless you wish to run your transistor at

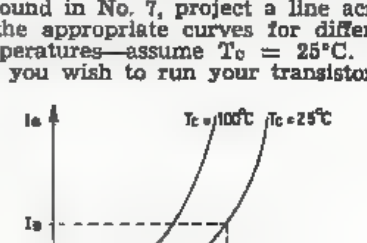
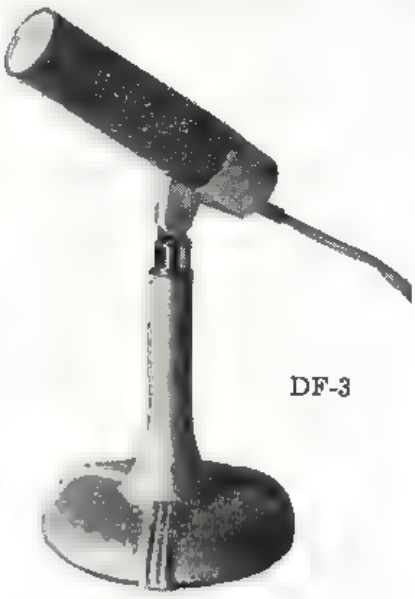


Fig. 3.

* 1 Mary Street, North Balwyn, E.9, Vic.

FOSTER DYNAMIC MICROPHONES



DF-3

SPECIFICATIONS:

Output Impedance	50 ohms or 50K ohms
Effective output level	—55 db. [0 db. — (one) 1V. Microbar]
Frequency response	50 to 15,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm. Swivel fits 5/8" 26 t.p.i. Stands.
Size: 4½" long, 1¼" diameter. Colour: TWO-TONE GREY.
Cable: 12 ft. of P.V.C.

Retail Price 50K ohms: £4/16/0 + Sales Tax 10/0
Retail Price 50 ohms: £4/14/0 + Sales Tax 9/10

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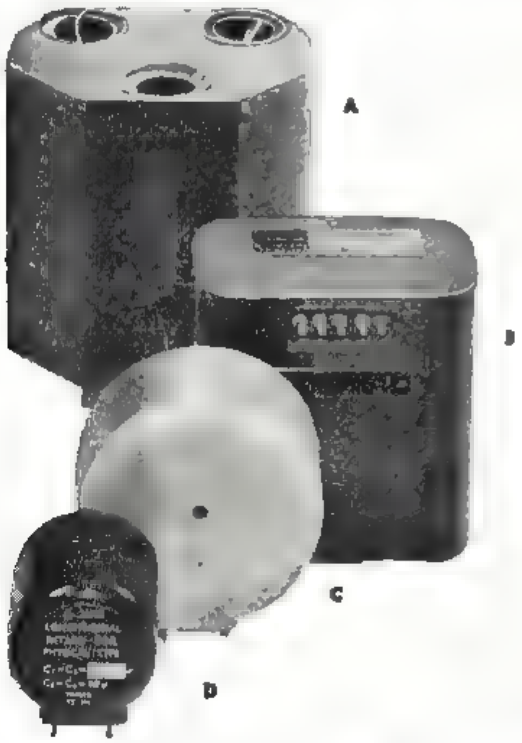

RESIN ENCAPSULATED TRANSFORMERS BY TRIMAX...

Designed for specific applications such as High Voltages, direct burial in the ground or other extreme environments! We've developed (and time proved) these construction techniques at "TRIMAX" using Epoxy resin for encapsulation! Leave your transformer problem to our skilled design team and we'll solve it! Illustrated at left
(A) Airport Runway Lighting Transformer..
(B) Telephone Isolation Transformer
(C) Telephone Drainage Coil.
(D) Telephone Longitudinal Retard Coil

LM Ericsson

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LM38

a higher temperature. Now drop a line down to the V_{BB} axis and this is your value for V_{BB}.

Another way is to look up the graph of I_C versus V_{BB} (see Fig. 4). Find your collector current value (I_Q) on the I_C axis, project a line across to the appropriate curve (T_C = 25°C.) and another line down to V_{BB} from the curve (Fig 4).

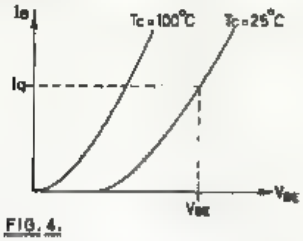

FIG. 4.

9 Now we have to consider our bias and stabilisation components.

So that only a small loss occurs in R2 and R_B, their resistances should be low. In practical circumstances we find that V_{BB} is one-tenth or less of the collector supply voltage (V_{CC}).

This ensures that R_B has a low value and yet provides part of the bias voltage we need and also reduce changes in forward conduction due to a rise in temperature.

Calculate R_B from the following formula:—

$$R_B = \frac{V_{CC}}{10\ I_Q}$$

where R_B is in ohms.
V_{CC} in volts.
I_Q in amps.

Use a resistor of proper power rating; this being given by:—

$$P_{RB} = V_{BB} \times I_Q \text{ watts.}$$

You can make R_B higher than this value for better thermal stability, but the bias and stabilisation components discussed here will only serve over a limited temperature range. More will be said about this in Part 4 on class B amplifiers.

10. To calculate R1 and R2, use the following formulae (refer to Fig. 1):—

$$\text{Let } I_{BB} = 10 \times I_B$$

$$\text{then } R2 = \frac{V_{BB} - V_{BE}}{I_{BB}}$$

where R2 is in K ohms
if V_{BB} and V_{BE} in volts
and I_{BB} in milliamps.

$$\text{Now } R1 = \frac{V_{CC} - V_{BE}}{I_{BB} + I_B}$$

where R2 is in K ohms
if V_{CC} and V_{BB} are in volts,
I_{BB} and I_B are in milliamps.

At this point check to see that V_{CB} max. is not exceeded:—

$$V_{CB} \text{ max.} > V_{CB} - V_{BB}$$

Those are the ten steps for setting up the d.c. and part of the a.c. conditions necessary for the proper operation of your chosen transistor. The next thing is to determine the turns ratio of T1 and T2 and the power required to drive the stage adequately.

Output Transformer T2

Let us take a look at what loads the output transformer T2 has to match (see Fig. 5).

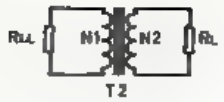

FIG. 5.

The load on the secondary, R_L, may be a speaker or the modulating impedance of the p.a. of a transmitter. The primary load, R_{LL}, is the effective load presented to the transistor collector to produce maximum power output. R_{LL} is actually the reciprocal of the slope of the a.c. load line found in No. 6 previously.

Therefore:—

$$R_{LL} = V_{CB} \div I_Q$$

$$\text{or } R_{LL} = V_{CC}^2 \div 2\ P_O.$$

The turns ratio is then given by:—

$$N1 \div N2 = \sqrt{R_{LL} \div R_L}$$

Now you can either obtain a transformer suitable for the purpose or design your own. Designing your own transformer would take an article in itself and, as this has already been done, I'll refer you to an excellent book, Bernard's Radio Manual, called "Coil Design and Construction." It is quite cheap and easy to follow—it would also come in handy for Part 2 of these articles.

Input Transformer T1

2. The input transformer T1 is a different kettle of fish. In some cases it is not necessary to have one and a capacitor input can be provided (see Fig. 6).

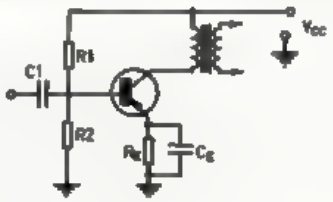

FIG. 6.

R1, R2, C1, C_E and R_E are found from Part 1 of these articles and the transistor and transformer found as outlined above.

3. The arrangement in Fig. 6 is suitable for transistors delivering up to 300 mW. output. If more than this is desired from a single ended output stage a transformer input must be used as in Fig. 1.

We can represent the driver transistor, the transformer T1 and the input circuit of the output transistor by the equivalent circuit in Fig. 7.

R1 and R2 are neglected—assumed negligible. The two rings crossing each other represent a constant current generator (e.g. a transistor).

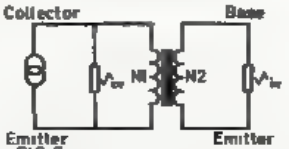

FIG. 7.

r_{ce} = Collector-emitter signal resistance of driver transistor.

r_{in} — Signal input resistance of output stage.

Now r_{in} can be obtained from the formula:—

$$r_{in} = \frac{v_{be}}{i_b}$$

where v_{be} — Base-emitter signal voltage swing (peak to peak).
and i_b — Base current swing with signal (peak to peak).

The value of v_{be} can be found from the **collector current** versus **base-emitter voltage** curves (see Fig. 8). Unless you plan to operate at a high temperature assume T_C = 25°C. (77°F.).

Now you will know your collector current swing (C to D on Fig. 2). Project the values across to the appropriate curve (Fig. 8) and down to the V_{BB} axis. By subtracting V_{BB} min. from V_{BB} max. you will find v_{be}.

The value of i_b can now be found by subtracting the value of I_B at point C in Fig. 2 from the value of I_B at point A,

i.e. I_B at C = 10 μA.
I_B at A = 80 μA.
then i_b = 70 μA. (p.-p.).

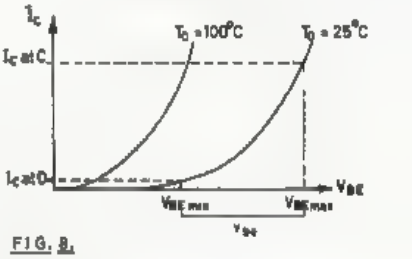

FIG. 8.

The value of r_{ce} (Fig. 7) must be known to enable us to determine the turns ratio of the transformer from the formula:—

$$N1 \div N2 = \sqrt{r_{ce} \div r_{in}}$$

The method above (1 to 10) can be used to select a driver transistor but first the power needed to drive the output stage must be known as this is the first criterion. The power input to the output stage is given by:—

$$P_i = v_{be} \times i_b \times 1.5$$

(multiply by 1.5 to account for losses, etc.)

using the values of v_{be} and i_b calculated above.

After designing your driver stage up to number 5, r_{ce} can be found from the formula:—

$$R_{ce} \approx \frac{V_{CC}}{I_Q \text{ (driver)}}$$

Knowing this will then enable you to calculate the turns ratio of the driver transformer.

PUSH-PULL CLASS A AMPLIFIERS

For proper operation of the amplifier in Fig. 9 the circuit **must** be electrically symmetrical. That is, the base currents, base signal voltages, base bias voltages, emitter resistors, collector currents and voltages must be arranged so as to produce identical output signals across each half of the primary of T2.

It sounds like a tall order but it is not very difficult to produce and the advantages are great.

The **advantages** of push-pull operation are:—

(a) More than twice power output over single ended stage for a given distortion.
(b) Even harmonics cancelled in output.
(c) When driven hard produces less distortion than a single ended stage.
(d) Ripple voltage on V_{cc} line does not appear in output owing to cancellation in output transformer.
(e) Output transformer less bulky for same power output from a single ended stage.

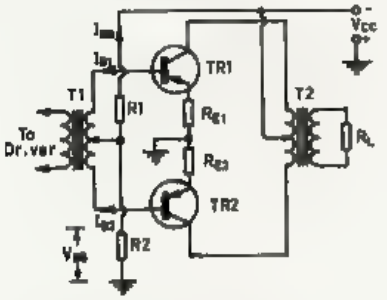

FIG. 9.

The **disadvantages** are:—
(a) Some difficulty can be experienced in trying to obtain gain-matched transistors.
(b) Requires more components and centre-tapped transformers.
(c) Draws more current from the supply than a single ended stage.

The design of a push-pull stage follows very closely that of a single ended stage.

Modifications to the procedure are as follows (refer to Fig. 9):—

1. P_o max. of T1 or T2 = P_o. Power output (P_o) having first been determined, this takes the place of No. 2 in method outlined above.

2. For calculating R1 and R2 use the following equations instead of those in 10 above:—

Now we assume $I_{B2} = 10\ (I_{B1} + I_{B2})$ therefore $I_{B2} = 20\ (I_{B1})$—assuming base currents approx. equal.

$$\text{Now R2} = \frac{V_{B2} + V_{BE1}}{I_{B2}}$$

$$\text{and R1} = \frac{V_{CC} - V_{B2}}{I_{B2} + 2\ I_{B1}}$$

(assuming symmetry).

3. The design of the output transformer will have to be modified slightly. The circuit of Fig. 7 can be modified to that in Fig. 10.

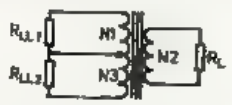

FIG. 10.

For symmetry, N1 = N3.

The turns ratio is given by:—

$$N1 \div N2 = \sqrt{R_{LL1} \div R_L}$$

R_L = Load on secondary (speaker or mod. impedance of tx).
$R_{LL1} = (V_{CE} \div I_Q)$ for T_{R1}

Now, seeing as both sides are symmetrical (we hope),

$$R_{LL1} = R_{LL2} = V_{CE} \div I_Q$$

(for T_{R1} or T_{R2}).

So the turns ratio can be easily found and the primary turns either side of the centre tap will be equal. It is suggested that the primary be bifilar wound. The start of one wire is connected to the finish of the other to provide the centre tap. The reasons for winding the primary in a bifilar fashion is to reduce transient response, increase coupling and reduce size and cost.

Note that the above design method for the transformer only considers one half of the primary at a time. If the collector to collector impedance is desired to be known (more usual) then multiply R_{LL1} by 4 (four). Or the turns ratio is given by:—

$$(N1 + N3) \div N2 = \sqrt{4\ R_{LL1} \div R_L}$$

Most ready made transformers specify a collector to collector impedance instead of collector to centre tap impedance. In that case use the above equation.

4. The input transformer (T1) turns ratio can be calculated from the following formula with reference to Fig. 11:—

$$N_P \div N_{BB} = \sqrt{r_{ce} \div (4 \times r_{ie})}$$

where r_{ce} = collector-emitter small signal resistance of driver transistor.
r_{ie} = small signal input resistance of the output transistor.
N_P = Number of turns on primary.
N_{BB} = Total base-to-base (c.t.) turns on secondary.

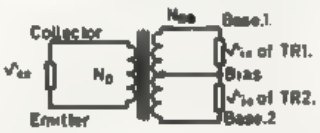

FIG. 11.

The values of r_{ce} and r_{ie} can be found as in the single ended stage method for either T_{R1} or T_{R2}.

5. For push-pull operation the power input required to drive the amplifier is found from

$$P_i = 3 \times V_{be} \times i_b$$

Design your driver accordingly.

Well, that completes a simple (?) approach to the design of class A power amplifiers. Unfortunately I had to limit the design cases and have not included complementary symmetry or transformerless amplifiers as I considered these special cases that did not have wide applications in Amateur Radio.

One thing I have not considered above is the stabilisation of base current against large temperature changes. This will be included under class B design—which will include a discussion on heat sinks.

The above data applies to PNP as well as NPN transistors—all you have to do is use the right symbols in the circuit and the right battery polarity.

Any queries should be addressed to me including an s.a.e.

"Transistor Circuit Design," Texas Instruments.
"Transistor A.F. Amplifiers," Jones and Hillbourne.
"Transistor Physics and Circuits," Riddle and Ristenhatt.
"Principles of Transistor Circuits," R. F. Shea.
"73 Magazine."

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

S.S.B. IN THE R.D. CONTEST

This month I must comment on the obvious increase in s.s.b. operation during the Remembrance Day Contest. It is, of course, a fact that most people now operate throughout the contest with the c.w./s.s.b. detector with b.f.o. in the "on" position and tune all the a.m. stations as single sideband signals. The high scorers, such as VK2AHM, use a.m. transmission so that they can collect up all of the stations which appear on the band. Those like myself, who do not possess a.m. gear (except on 142 mcs.) are prepared to miss out those a.m. stations which are either too badly frequency modulated or "pulled," or which are not equipped with b.f.o.'s, or whose ancient procedures are too long-winded for contest operation.

One instance which comes to mind was when four sideband stations were all on frequency for a "fresh" a.m. station which had just opened up on the 80 metre band on Saturday evening. After a few minutes of calling, in turn and without mutual interference, they all agreed to seek pastures new as the a.m. man did not answer, did not comment, but just went on calling CQ with no a.m. replies, even. I am sure the sidebanders have absolutely no complaint about the a.m. stations which were correctly operated except perhaps for the occasional loud heterodynes from the carriers.

This year I operated for about 14 hours for 291 contacts, about 29% of which were a.m. and the rest sideband. This indicates the trend towards s.s.b., and the improved operating procedures which have accompanied its introduction. Even in the so-called "dog-piles" it was possible to sort out who was in there about third layer down, without the clobbering of the carriers—which, of course, blot out everything, with the result that everybody has to start all over again.

It was a wonderful contest and gets better every year—but where were the VK2s this year?

CERAMIC FILTERS FOR S.S.B.

A recent article in the R.S.G.B. "Bulletin" for July 1966 describes a transistor s.s.b. exciter using a ceramic disc filter with characteristics at the 6/60 db. points similar to the popular mechanical filters from U.S.A. and Japan. The particular filter used is a Brush-Clerite filter type TL-2D5A, which uses 17 ceramic disc elements arranged in a very compact filter as shown in Fig. 1. This ingenious filter is compatible with transistor equipment as far as both size and impedance are concerned, as its input and output impedances are both 2500 ohms, and it requires no coils or tuning capacitors, so that connection directly to the circuits is practicable.

The wide-band response curve shown in Fig. 2 indicates some quite remote spurious responses which are easily removed by simple i.f. transformers of the type used in 455 Kc. circuits in receivers. A good feature of these filters is the high attenuation just outside of the passband, which settles down at better than 70 db. below the level of the frequencies within the band. Sidebanders will appreciate the application of these for receivers for elimination of strong signals on adjacent channels. Other advantages of the ceramic filters are their robustness, stability, low pass-band ripple (1 to 3 db. when correctly terminated) and wide range of operating temperature (—40°C. to +85°C.). Before anybody gets too excited about such performance, it must be stated that the price in Australia is likely to be just in excess of that of a mechanical filter (several dollars more).

So far I have been unable to find out whether carrier crystals for the oscillators are available to suit the filters, but these of course would cost extra, and would need to be specially selected.

Although I have not had an opportunity to test these filters as none, to my knowledge, have been imported yet, but my "G" sources tell me they are absolutely ideal for transistor receivers, being about the size of an inch and a half of the end of your "Biro" pen. About 80 db. of stop band attenuation in one-tenth of a cubic inch is quite an achievement.

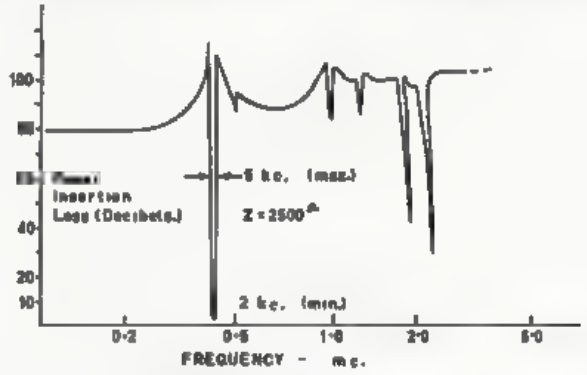

FIG. 2. Approx Wide band response of Ceramic filter type TL2D5A. (17 Element)

Where these filters are to be used with valve circuits, the use of L or Pi matching circuits to increase the input and output impedances, is normal practice.

Published data states that the linearity of the phase-shift throughout most of the pass-band is adequate for most applications, and speech quality in the exciter described in the R.S.G.B. article was stated to be excellent.

Vibration and shock tests as per MIL-STD-202B, were stated to be mild for this type of filter, and extreme tests indicated that G-forces in excess of 100 were necessary to cause intermittent performance, and the filter returned to within tolerance after the test.

This data is published for pure interest for readers as these filters are relatively new and could offer a new avenue for experiment. I should be interested to pass on information from anybody who has had practical experience with them.

73 for now, Phil 5NN.

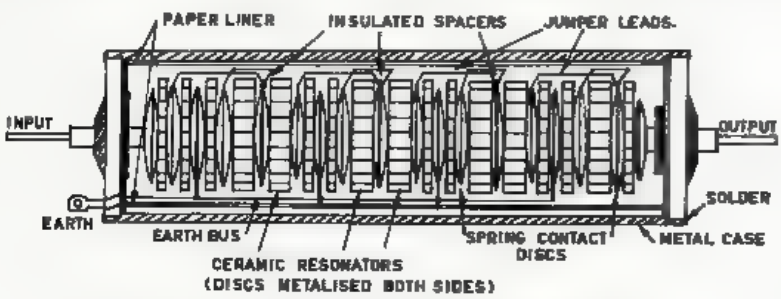

FIG. 1. CERAMIC LADDER FILTER.- 17 ELEMENT.
(Approx 1⅛" Long x 5/16" Dia.)

RAYTHEON
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now introduces the newest 4 BAND, SINGLE-SIDEBAND TRANSCEIVER with BUILT-IN POWER PACK for AC or mobile use.

SINGLE SIDEBAND communications on four popular amateur radio bands (80, 40, 20 & 15 meters) are offered in a new transistorized transceiver from Sideband Engineers, a unit of Raytheon Company. **Compact, 20-pound** SB-34 measures only 11¼" by 10" by 5" and can be operated as a base station or a mobile unit from either 117 volt AC or 12 volt DC. From SBE . . . **A COMPLETELY NEW SIDEBAND TRANSCEIVER, SB-34!** All of the design features introduced originally in the SB-33, and now well proved have been retained . . . an entirely new series of "plus performance" features have been added. And SB-34 is handsome equipment . . . conservatively styled, attractively appointed . . . is in a physical "package" that is even smaller than SB-33! Feature-wise . . . dollar-wise . . . **SB-34 LEADS THE FIELD** . . . represents the biggest transceiver value EVER! Here are some of the reasons:

SB-34 HAS A BUILT-IN UNIVERSAL POWER SUPPLY! Just connect the equipment directly to the vehicle 12 volt battery using the cable provided! Or use the second cable and plug it into 117 volt AC power supply. No inverters or other supplementary equipment needed.

LOW-DRAIN STANDBY OPERATION. Drain-saving panel switch turns off transmitter tube filaments and power supply for casual listening. In this condition, SB-34 draws only ¼ ampere from the car battery!

UPPER OR LOWER SIDEBANDS ARE SELECTABLE BY PANEL SWITCH. The two sidebands are locked positively to the carrier — dial shift can't occur.

LOUDSPEAKER IS BUILT-IN.

A COLLINS MECHANICAL FILTER is used both on transmit and receive; gives exceptional selectivity and a clean, sharp transmitted signal.

EXPANDED FREQUENCY COVERAGE. SB-34 provides 250 kc on 80-40-20-15 meter bands, covers MARS and out-of-band DX frequencies. (See specifications for specific ranges.)

SOLID-STATE SWITCHING . . . NO RELAYS. In SB-34, all circuits are switched from receive to transmit by modern solid-state techniques — a breakthrough in transceiver design that eliminates all relays!

SOLID-STATE, ALC CONTROL.

SOLID STATE DIAL CALIBRATION: EXCLUSIVE! Varactor circuitry and control allows easy dial calibration to operating frequencies. SB-34 has provision for 100 kc crystal calibrator, includes calibrator ON-OFF front panel switch.

DELTA RECEIVER TUNING. With this feature receiver can be tuned over a range of several kilocycles either side of the transmitter frequency. This eliminates the "leap frogging" problem.

LOW FREQUENCY DRIFT . . . Drift is normally less than 100 cycles in any 30 minute period under normal ambient conditions.

DUAL-SPEED TUNING. Shaft mechanism allows fast dial movement to desired part of the band and smooth, slow-speed drive for positive vernier tuning. Tuning system avoids dial shift under severe vibration.

SB-34 leads the field.

SPECIFICATIONS

FREQUENCY RANGE: 3775-4025 kc, 7050-7300 kc, 14.1-14.35 mc, 21.20-21.45 mc. TUBE AND SEMICONDUCTOR COMPLEMENT: 2—6GB5 power amplifier, 1—12DQ7 driver. 23—transistors, 18—diodes, 1—zener diode, 1—Varactor diode. SIZE: 5"H, 11¼"W, 10"D. Shipping weight, Approx. 20 pounds.

TRANSMITTER POWER INPUT. 135 watts. (Slightly lower on 15) DISTORTION PRODUCTS: Down at least 25 db CARRIER SUPPRESSION:—50 db. SIDEBAND SELECTION: Upper or lower sideband selectable by panel switch. UNWANTED SIDEBAND: Down 40 db min @ 300 cps. ANTENNA IMPEDANCE: 40-100 ohms unbal. AUDIO BANDSWITCH: 300-2400 cps @ 6 db.

RECEIVER

SENSITIVITY: 1 μV for 10 db signal/noise. SELECTIVITY: 2.1 kc @ 6 db, 5.3 kc @ 60 db. SPURIOUS RESPONSE: Images and IF response down at least 40 db. STABILITY: Less than 100 cps drift in any 30 minute period under any normal ambient condition. AUDIO OUTPUT: 2.0 watts @ 10% distortion. TUNING RATE: 14 kc per revolution (slow) 80 kc per revolution (fast). SPEAKER: 3.2 ohms built-in. Terminals on rear for external speaker. POWER SUPPLY: Built-in 117V AC/12V DC (negative ground) dual supply. Conversion is made automatically by proper line cord.

POWER CONSUMPTION

AC OPERATION: 35 watts, receive. 165 watts transmit (single tone). DC OPERATION: 0.5A receive only (Standby) 3.6A receive (xmtr ready) 16.0A transmit (single tone).

ACCESSORIES

● Model SB-2, VOX ● Model SB-2XC, 100 kc crystal calibrator ● Model SB1-MB mounting plate for mobile use ● Model SB-1MIC controlled magnetic microphone ● SB1-LA LINEAR AMPLIFIER. Operates at 1,000 P.E.P. input on 80, 40 and 20 meters, 750 watts on 15 meters. Size: 5¼"H x 11¾"W x 11¾"D.

For further information contact: Electronics Sales Dept.,

HAWKER DE HAVILLAND AUSTRALIA PTY. LTD.

12 KITCHENER PARADE, BANKSTOWN, N.S.W. 'Phone 70 2073, 70 2160, 709 2758

Technical Correspondence—

Transistor Amplifier Design

AUTHOR'S REPLY

Editor "A.R.," Dear Sir,

I feel obliged to defend myself in the face of Mr Metzenthen's criticisms as I feel some misunderstanding has occurred. I will answer his points as he presented them

1. Somehow this did not appear in the article—it is in my notes, but I think that, as some knowledge of transistors is assumed, then people who choose to use a high supply voltage would check this anyway

2. My choice of I_C was made to cover the general case. I will admit that out of approximately 160 transistor characteristics I perused, I found three that had their highest h_{FE} just below 2 mA. They were: SE4010, 2N3639, and 2N3640.

I found that h_{FE} was, in most cases, best between 3 and 5 mA.

I do not agree that silicon transistors can usually be operated with a very low I_C **except** where gain is of secondary importance and/or a higher input impedance desirable.

3. Quite true—but the equation

$$R_C = \frac{V_{CE}}{I_C} \quad \ldots\ldots \quad (1)$$

was taken from the half voltage rule which states

V_{CE} is less than or equal to $\frac{V_{CC}}{2}$. (2)

Now, for thermal stability we must have an emitter resistor, the voltage drop (V_{RE}) across which cannot be ignored—thus

$$V_{CE} < \frac{V_{CC}}{2} \quad \ldots\ldots \quad (3)$$

for these circumstances.

So as to provide people with a starting point, I said let

$$V_{CE} = \tfrac{1}{2} V_{CC} \quad \ldots\ldots \quad (4)$$

as this fulfils the above condition in equation (3). When all worked out, V_{CE} will **not** equal $V_{CC} \div 3$. V_{RE} will be less than $V_{CC} \div 3$ and consequently V_{CE} will approach $V_{CC} \div 2$, thus making equation (1) valid.

It is next to impossible to say what the final value of V_{CE} is beforehand. I chose to let $V_{CE} = V_{CC} \div 3$ .... (4) to enable R_B and R_C to be calculated and provide a starting point that would not upset the final value of I_C by a significant amount. For further information see "Reference Manual of Transistor Circuits" by Mullard; "Germanium and Silicon Transistors and Diodes" by Philips, and the "Transistor Manual" by G.E.

4. Arguments on the correctness of this equation could cause a major controversy. I have seen a derivation of this equation which, to me, appears reasonable. Mr. Peter Hammer (VK-3ZPI) kindly supplied me with his version of the correct equation plus a derivation. Mr. Metzenthen has failed to supply me with what he thinks the correct equation is and a derivation (which, I think under the circumstances, is needed). I wonder if we all end up with separate equations?

I feel though that I should defend my use of this equation and answer Mr. Metzenthen's criticism.

(a) It is not a printer's error.

(b) Prior to publication, and despite much research, I found no other equations.

(c) Upon investigation it appeared to work satisfactorily.

5. I think these assumptions are quite reasonable for the following reasons:—

(a) Considering the wide variations in R_{IN}, I had to fix upon some value that would give reasonable results (i.e. nothing drastic would occur). For germanium transistors the value of R_{IN} = 500 ohms was chosen to suit many situations—I will admit it is on the low side as is the value for silicon transistors.

(b) The values are chosen this low to give errors that are on the high capacitance side which, I think, is the desirable side.

(c) For most cheap, low level application, silicon transistors (i.e. ones that are most likely to be used), the range of R_{IN} is between 480 and 1400 ohms (roughly). Is not 1000 ohms a reasonable average? (For further reference, see "Transistors" by Diver, and "Transistor Manual" by G.E.)

6. Here I shall concede that I made a genuine blunder—sorry. It should read 1300 ohms. I made a mistake in transcribing some information from a piece of paper to my notes. This type of error is hard to pick up when you have innumerable things to consider simultaneously (ever tried to write an article?).

It should be understood that the example serves just to illustrate the method—nevertheless, it should be correct and I apologise for my error.

7. I hope Fig. 1 clarifies the situation.

I did consider including this in the article but when I came to condense my notes I decided that it was unnecessary and would be reasonably clear from the later example.

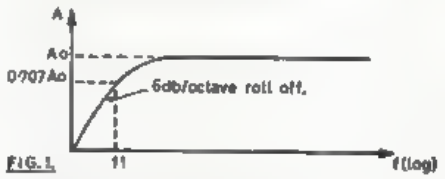

FIG. 1.

Anyhow, the equations (1) and (2) were only included so that people who found that the graphs did not fit their circumstances could calculate an appropriate value for C_B and C_E.

I shall ignore his last comment.

In conclusion, I would like to add that Mr. Metzenthen seems to have lost sight of the fact that the article was **not** an engineering approach to the subject.

It was written for the home constructor who—

(a) Cannot find a circuit to suit his needs;

(b) Wants to use a transistor on hand, or just wants to use a transistor;

(c) Does not just want to "lift" a circuit from elsewhere, or

(d) Does not wish to involve himself in lengthy theoretical considerations which he may not understand.

Despite the fact that the equation for C_B is in dispute and assumptions were made for the values of R_{IN}, the system works and nothing catastrophic will result from its use.

—Roger L. Harrison, VK3ZRY.

— • • • —

V.H.F./U.H.F. STATE RECORDS

				miles
New South Wales:				
50 Mc.	VK2ADE	to VE7AQQ,	8/4/59	7390
144 Mc	VK2ZMR	to ZL2AAH,	8/1/65	1410
432 Mc	VK1VP/1	to VK2ZPT,	14/8/65	176
576 Mc	No claim.			
1296 Mc	VK2ZAC	to VK2ZCF/8,	4/3/63	46.6
Victoria.				
50 Mc	VK3ALZ	to XE1FU,	1/5/59	8418
144 Mc	VK3ZNC	to ZL3HP,	13/12/65	1678
432 Mc	VK3ALZ	to VK5ZDE,	28/5/65	468
576 Mc	VK3AKE	to VK3ANW,	11/12/49	30.7
1296 Mc	VK3ALZ	to VK3AUX/3,	10/4/65	25.6
2300 Mc	VK3XA	to VK3ANW,	18/3/50	9.0
3300 Mc	VK3ZQT/3ZGK/3	to VK3ZDQ/3,	14/12/63	68.4
Queensland:				
50 Mc	VK4ZAZ	to K5ERG,	16/3/58	5305
144 Mc	VK4ZWB	to VK7ZAO/7ZAQ,	9/1/65	1117
	No other claims			
South Australia:				
50 Mc.	VK5KL	to W7ACS/KH6,	26/6/47	5361
144 Mc.	VK5ZHJ	to VK6ZCN,	8/1/65	1330
432 Mc.	VK5ZDE	to VK5ALZ,	28/5/65	468
576 Mc.	VK5ZTM/5ZPQ/5	to VK5ZIS/5ZJH/5,	28/1/65	105.5
1215 Mc	VK5LA/5	to VK5ZCR/5 (now VK5ZEK),	6/1/62	1.0
Western Australia:				
50 Mc	VK6BE	to JA6BP,	30/10/58	5490
144 Mc	VK6ZCN	to VK6ZHJ,	8/1/65	1330
432 Mc	VK6ZDS	to VK6LK/6,	25/4/58	66.5
576 Mc	VK6ZDS8	to VK6LK/6,	15/12/63	101.2
1296 Mc	No claims.			
Tasmania:				
50 Mc	VK7LZ	to JA9IL,	3/12/59	5462
144 Mc.	VK7ZAO/7ZAQ	to VK4ZWB,	9/1/65	1117
432 Mc.	VK7LZ	to VK3ZDM,	8/1/65	312

N.B.—Australian Records in bold type.

ROSS HULL MEMORIAL V.H.F. CONTEST, 1966-67

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual contest which is held to perpetuate the memory of Ross Hull whose interest in v.h.f./u.h.f. did much to advance the art.

A Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed certificate.

Objects: Australian Amateurs will endeavour to contact as many other Amateurs in Australia and Overseas under the following conditions.

Date of Contest: From 0001 hrs. E.A.S.T., 10th December, 1966, to 2359 hrs. E.A.S.T., 15th January, 1967.

Duration: Any seven calendar days within the dates mentioned above, not necessarily consecutive. These periods are to be at the operator's convenience. A calendar day is from 0001 hrs. E.A.S.T. to 2359 hrs. E.A.S.T.

RULES

1. There are two divisions, one of 48 hours duration, and one of 7 days. In the 7-day division, there are three sections:—

(a) Transmitting, Open;
(b) Transmitting, Phone;
(c) Receiving, Open.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f./u.h.f. bands may be used, but no crossband operating is permitted. Operators are cautioned against operating transmitting equipment on more than one frequency at a time, particularly when passing cyphers. Crossband operation to assist contest working is prohibited.

Such operation will be grounds for disqualification. Cross mode contacts will be permitted.

4. Amateurs may enter for any of the transmitting sections The seven-day winner is not eligible for the 48-hour award.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licenses.

8. **Cyphers**: Before points may be claimed for a contact, serial numbers must be exchanged. The serial numbers of 5 or 6 figures will be made up of the RS (telephony) or RST (c.w.) report plus three figures commencing from 001 for the first contact and will increase in value by one for each successive contact. If any contestant reaches 999, he will start again with 001.

9. **Entries** MUST be set out as shown in the example, using only one side of the paper. Entries must be postmarked not later than the 13th February, 1967, and clearly marked "Ross Hull Contest," and addressed to **Federal Contest Manager, Box N1002, G.P.O. Perth, W.A.**

SCORING TABLE

Distance in Miles	52 Mc.	144 Mc.	432 Mc.	576 Mc.	Higher
Up to 25 miles	1	1	2	10	20
26 to 50 "	1	1	10	25	50
51 to 100 "	2	5	25	75	100
101-200 "	5	10	50	100	200
201-300 "	15	15	75	200	
301-500 "	10	20	100		
501-1000 "	5	25	200		
1001-1500 "	10	50			
1501-2500 "	20	100			
2501-3500 "	35	200			
3501-5000 "	50				
5001-8000 "	100				
8001 and over	200				

10. **Scoring** for all sections will be based on the attached table. Distances must be shown in the log entry as shown in the example. Failure to make this entry will invalidate the particular claim. Some typical distances are given in the attached table.

11. **Logs**: All logs shall be set out as in the example and addition will carry a summary sheet showing the following information:

Name..... Call Sign
Address..... Division
..... Claimed Score
Operating Dates..... ..... (7 cal. days)
Highest score over a 48-hour period was..... points.
Operating period:
from..... hrs. E.A.S.T. ..../..../6 ..
to..... hrs. E.A.S.T. ../../6 ....

Declaration: I hereby certify that I have operated in accordance with the conditions of my licence and abided by the Rules of the Contest.

Signed .....
Date .....

12. Entrants not abiding by the Rules of this Contest will be disqualified.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards**: Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting section and who is a financial member of the W.I.A. will have his name inscribed on the Trophy which will be held by his Division for the prescribed period. A certificate will be awarded to the contestant, who shall not be the Trophy winner, and who returns the highest scoring log covering a period of any 48 consecutive hours. Also, certificates will be awarded for operating in the Ross Hull Contest and breaking any Australian v.h.f./u.h.f. distance record.

The Distance Table for scoring is shown on Page 19.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no active transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting stations, however there is no 48-hour sub-section.

3. To count for points, logs will take the same form as for transmitting sections, but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations, i.e. on the distance between the listener's station and the station heard. See the examples given. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes.

5. **Awards:** Certificates will be awarded to the highest scorer in VK and Overseas countries.

EXAMPLE OF TRANSMITTING LOG (Brisbane Station)

Date/ Time E.A.S.T.	Band Mcs.	Emission Power	Call Sign	RST/No. Sent	RST/No. Rcvd.	Dist. Miles	Points Claim
24th Dec. 0100 E.A.S.T.	52	A3 (a)	VK7ZAI	58001	59004	1110	10
0110 E.A.S.T.	52	A3 (a)	VK4NG	58002	57051	330	10
0230 E.A.S.T.	144	A3	VK5ZK	56003	55043	990	25
0235 E.A.S.T	144	A3	VK3ZJQ	45004	46021	850	25

EXAMPLE OF RECEIVING LOG (Perth S.w.l.)

Date/ Time E.A.S.T.	Band Mcs.	Call Heard	RST/No. Sent	Station Called	Distance Miles	Points Claim
2nd Jan. 1000 E.A.S.T.	52	VK5ZDX	59221	VK6KK	1330	10
1025 E.A.S.T.	52	VK3ZCF	58195	VK6ZAA	2040	10
1110 E.A.S.T.	432	VK6ZDS/6	57051	VK6LK/6	80	25
3rd Jan. 0500 E.A.S.T.	144	VK3ZHJ	44102	VK6ZCN	1330	50

1966 R.D. CONTEST RESULTS

VK6 FOR '66

The Federal Contest Committee announces the results of the 1966 R.D. Contest. VK6 wins by a narrow margin from VK5, who have held this position for the past two years.

Allowing for cross-mode operation, the States' scores are higher than previous years. This is due to enthusiastic participants making better use of their time.

The logs this year were of a higher standard and operators are complimented for their prompt despatch of their logs, enabling an early announcement of the results.

Next year's rules will include Z call licensees and the scoring principle as suggested by the Federal Communications Manager.

—Neil Penfold, VK6ZDK, for F.C.C.

DETAILS OF STATE SCORES

State	Log Entry	Licences	%	Total State Score	Aver. Top Six Logs	State Points
New South Wales	100	1,296	7.7	19,286	778	2,264
Victoria	74	1,101	6.7	21,619	897	3,239
Queensland	90	444	20.3	18,510	996	4,754
South Australia	97	474	20.5	20,539	832	5,043
Western Australia	74	266	27.8	15,405	944	5,228
Tasmania	39	128	30.5	8,093	840	3,108

STATE TROPHY WINNER

Western Australia

STATE PLACINGS

Western Australia	1
South Australia	2
Queensland	3
Victoria	4
Tasmania	5
New South Wales	6

AWARD WINNERS

Phone—

	Points		Points
VK1QL	610	VK6RY	999
2XA	675	7TX	873
3MO	1273	8DI	173
4BQ	1013	9DJ	1539
5EF	916		

C.w.—

	Points		Points
VK2QL	493	VK6WT	392
3AXK	481	7GK	252
4XW	305	8HA	273
5FO	365	9CJ	165

Open—

	Points		Points
VK1DA	433	VK6RU	1365
2AHM	1304	7SM	1290
3AKS	693	9AG	828
4RH	1369	0MI	990
5BI	588		

Section D—Receiving

VK1—J. Hurran	375 pts.
VK2—A. Nutley	1083 "
VK3—P. Forbes	784 "
VK4—D. Clark, L4144	1042 "
VK5—J. Ross	917 "
VK6—F. Price, L6003	675 "
VK7—G. C. Johnston	1305 "
Club Entry—Vic. Amateur Listeners' DX Club	954 "

Section E—V.h.f./U.h.f.

	Points		Points
VK2ZCF	84	VK5ZDX	53
3ZCK	60	6ZER	6
4ZEP	8	7ZJG	26

AUST. CAPITAL TERRITORY

Top Six Logs—

VK1QL	610 pts.	VK1DA	433 pts.
1VP	389 "	1JG	312 "
1VK	319 "	1JL	305 "

Phone—

VK1QL	610 pts.	VK1JL	305 pts.
1VP	389 "	1TV	168 "
1JG	312 "	1GB	80 "

Open—

VK1DA	433 pts.	VK1PI	68 pts.
1VK	319 "		

NEW SOUTH WALES

Top Six Logs—

VK2AHM	1304 pts.	VK2BGF	644 pts.
2BO	888 "	2ATT	573 "
2XA	675 "	2AKF	534 "

Phone—

VK2XA	675	pts.	VK2NZ	94	pts.
2BGF	644	"	2OH	89	"
2AKF	534	"	2AKL	85	"
2PF	470	"	2AHL	84	"
2ALV	444	"	2CU	80	"
2AEC	430	"	2HQ	80	"
2AEO	424	"	2AIM	72	"
2AFD	368	"	2CK	71	"
2BMK	366	"	2BCP	67	"
2FM	356	"	2GI	67	"
2ACD	339	"	2SG	61	"
2OD	339	"	2YH	58	"
2AGP	280	"	2SJ	54	"
2RU	256	"	2VQ	52	"
2AHV	236	"	2APQ	49	"
2SS	225	"	2AC	47	"
2ARZ	217	"	2UJ	47	"
2QZ	198	"	2RP	46	"
2BO	190	"	2BLF	44	"
2MW	179	"	2ABO	44	"
2AVT	178	"	2AAH	40	"
2EK	175	"	2ADA	40	"
2AUC	174	"	2ADL	37	"
2BB	160	"	2AHA	36	"
2XT	127	"	2OT	27	"
2ZX	120	"	2AAJ	24	"
2AVJ	118	"	2AXJ	12	"
2AFA	113	"	2ABB	12	"
2TS	111	"	2OM	11	"
2ACK	103	"	2TP	11	"
2AHP	98	"	2EH	9	"

C.w.—

VK2QL	493	pts.	VK2EL	165	pts.
2AGI	335	"	2ZC	147	"
2YB	305	"	2PQ	143	"
2XQ	296	"	2AJQ	136	"
2VN	273	"	2ATA	118	"
2ADJ	269	"	2JY	65	"
2EO	226	"	2HZ	61	"
2WT	217	"	2AC	47	"
2NS	215	"	2ZO	33	"
2GT	194	"	2JM	13	"
2GW	171	"	2AWI	9	"

Open—

VK2AHM	1304 pts.	VK2ML	236 pts.
2BO	888 "	2AKE	204 "
2ATT	573 "	2VS	141 "
2AAB	365 "	2BCC/P	134 "
2AGH	349 "	2HC	80 "
2PU	339 "	2IC	68 "
2DA	268 "	2ASJ	54 "
2SU	244 "	2ANL	36 "

VICTORIA

Top Six Logs—

VK3MO	1273 pts.	VK3EG	789 pts.
3ARD	933 "	3WK	793 "
3DF	930 "	3LW	721 "

Phone—

VK3MO	1273	pts.	VK3NN	214	pts.
3ARD	933	"	3VK	210	"
3DF	930	"	3AFU	200	"
3EG	789	"	3WY	185	"
3WK	733	"	3KT	178	"
3LW	721	"	3LK	178	"
3RV	718	"	3PP	162	"
3AFW/P	640	"	3AWV	157	"
3AEJ	633	"	3AKO	150	"
3ADW	527	"	3APT	149	"
3XY	519	"	3KM	136	"
3AUL	518	"	3AKB	98	"
3ASN	476	"	3ATN/P	94	"
3AGM	398	"	3ARM	88	"
3VZ	378	"	3VF	86	"
3AMK	343	"	3ABF	85	"
3SM	308	"	3AIE	83	"
3GC	293	"	3XV	61	"
3DG	286	"	2RJ/3	54	"
3KK	276	"	3YQ	50	"
3EF	273	"	3ARJ	36	"
3DY	259	"	3AGQ	33	"
3AAO	239	"	3AAC	26	"
3ZU	231	"	3AJP	19	"
3AWT	228	"			

C.w.—

VK3AXK	481	pts.	VK3QP	305	pts.
3APJ	423	"	3ARV	145	"
3ADB	380	"	3UM	62	"
3IB	314	"	3AEY	20	"
3RJ	251	"	3ZZ	7	"
3APR	948	"	Check Log 3GS		

Open—

VK3AKS	693	pts.	VK3KC	187	pts.
3QV	578	"	3AHW	118	"
3XB	422	"	3KS	118	"
3APN	380	"	3VS	112	"
3OP	348	"	3AWM	102	"
3SR	171	"	3KB	66	"
3ABA	160	"	3AJB	60	"

QUEENSLAND

Top Six Logs—

VK4RH	1369 pts.	VK4WW	886 pts.
4LT	1056 "	4AL	975 "
4BQ	1013 "	4AK	766 "

Phone—

VK4BQ	1013	pts.	VK4FE	81	pts.
4WW	886	"	4SF	48	"
4AL	875	"	4EH	48	"
4AK	768	"	4PX	46	"
4JI	765	"	4WI	40	"
4JM	757	"	4TF	40	"
4FA	759	"	4XN	38	"
4JC	596	"	4VJ	35	"
4NH	586	"	4QC	33	"
4MF	472	"	4ZZ	32	"
4PS	402	"	4HD	32	"
4DO	358	"	4LX/P	31	"
4KO	323	"	4FN	30	"
4CK	321	"	4JJ	28	"
4HB	302	"	4LW	26	"
4MW	287	"	4CW	25	"
4DZ	245	"	4RW	24	"
4OF	237	"	4RG	23	"
4PJ	219	"	4ZW	23	"
4MY	217	"	4QP	21	"
4AF	201	"	4GT	21	"
4GP	179	"	4IO	20	"
4JQ	165	"	4LA	20	"
4DV	156	"	4GS	19	"
4UW	148	"	4BM	19	"
4EQ	131	"	4GG	15	"
4RL	97	"	4AH	14	"
5CZ	89	"	4NZ	14	"
4XY	88	"	4KZ	14	"
4LE	88	"	4SA	13	"
4XJ	86	"	4EF	13	"
4UD	86	"	4AN	10	"
4SD	73	"	4NG	10	"
4CS	69	"	4HW	9	"
4BG	68	"	4AQ	6	"
4UB	64	"	4XH	5	"
4FX	61	"	4HZ	5	"
4RO	61	"			

C.w.—

VK4XW	305	pts.	VK4XP	74	pts.
4JF	238	"	4UU	19	"
4UC	121	"			

Open—

VK4RH	1369 pts.	VK4AI	134 pts.
4LT	1066 "	4QW	79 "
4VX	727 "	4WO	66 "
4RZ	653 "	4YS	28 "
4DP	448 "	4VO	13 "

SOUTH AUSTRALIA

Top Six Logs—

VK5EF	918 pts.	VK5KM	514 pts.
5IZ	861 "	5EK	779 "
5NY	845 "	5GZ	773 "

Phone—

VK5EF	918 pts.	VK5CH	75 pts.
5IZ	861 "	5PH	74 "
5NY	845 "	5LQ	67 "
5KM	814 "	5MS	66 "
5EK	779 "	5VB	64 "
5GZ	773 "	5TU	62 "
5NN	736 "	5NW	57 "
5ZE	693 "	5YS	49 "
5ZZ	583 "	5CJ	48 "
5OH	541 "	5DJ	45 "
5CD	501 "	5EW	45 "
5GX	487 "	5ZL	40 "
5RG	469 "	5FJ	38 "
5FT	444 "	5PM	38 "
5LN	442 "	5MM	35 "
5TY	364 "	5ZA	35 "
5TJ	363 "	5FC	34 "
5UJ	334 "	5CL	33 "
5FL	308 "	5KF	29 "
5XM	296 "	5VG	29 "
5LC	287 "	5FR	29 "
5WN	270 "	5WI	26 "
5JC	252 "	5DO	23 "
5WG	230 "	5JO	23 "
5XL	213 "	5OK	23 "
5IM	203 "	5ID	17 "
5MF	166 "	5XO	15 "
5TM	157 "	5DF	13 "
5BQ	150 "	5KS	13 "
5WL	145 "	5BP	11 "
5SS	103 "	5UF	11 "
5TN	99 "	5ZK	9 "
5OB	86 "	5QF	8 "

C.w.—

VK5FO	365 pts.	VK5RX	45 pts.
5XK	324 "	5ET	42 "
5LD	197 "	5RK	32 "
5OR	117 "	5RH	32 "
5QP	99 "	5HO	30 "
5TL	61 "	5JG	29 "
5MZ	61 "	5BZ	13 "
5MR	50 "	5KU	5 "

Open—

VK5BI	588 pts.	VK5HM	191 pts.
5PF	486 "	5NH	161 "
5AX	401 "	5FH	137 "
5WO	389 "	5AU	150 "
5ZF	314 "	5CV	115 "
5MY	296 "	5EO	101 "
5ZQ	286 "	5NK	86 "
5QR	275 "		

WESTERN AUSTRALIA

Top Six Logs—

VK6RU	1365 pts.	VK6PH	864 pts.
6RY	999 "	6CW	687 "
6XX	987 "	6LR	573 "

Phone—

VK6RY	999 pts.	VK6EZ	86 pts.
6XX	987 "	6BR	80 "
6CW	687 "	6LG	63 "
6LR	573 "	6HK	72 "
6XY	556 "	6FL	67 "
6XW	518 "	6NM	62 "
6MF	452 "	6KW	56 "
6VK	448 "	6VM	54 "
6DA	429 "	6BU	52 "
6WY	425 "	6MM	50 "
6LK/P	330 "	6XO	45 "
6CT	308 "	6RX	40 "
6CN	286 "	6CR	37 "
6CF	261 "	6VF/P	33 "
6CY	205 "	6MK	30 "
6JH	176 "	6JO	30 "
6RG	175 "	6NN	29 "
6CD	173 "	6LM	27 "
6KH	173 "	6PW	24 "
6OM	165 "	6BS	23 "
6DR	151 "	6BC	21 "
6TX	148 "	6KN	21 "
6DT	147 "	6GW	18 "
6KJ	143 "	6YL	17 "
6HA	136 "	6WI	16 "
6WL	130 "	6TH	16 "
6EB	103 "	6GL	10 "
6GH	98 "		

C.w.—

VK6WT	393 pts.	VK6ZZ	28 pts.
6RS	206 "	6AJ	26 "
6WW	111 "	6WG	24 "
6WQ	76 "	6QJ	16 "
6AS	65 "	6JK	11 "

Open—

VK6HU	1365 pts.	VK6SM	340 pts.
6PH	954 "	6AV	231 "
6BE	536 "	6MA	68 "
6KK	434 "	6RP	42 "
6NS	423 "		

TASMANIA

Top Six Logs—

VK7SM	1290 pts.	VK7AI	630 pts.
7DK	1286 "	7ZZ	515 "
7TX	873 "	7XL	454 "

Phone—

VK7TX	873 pts.	VK7KC	89 pts.
7AI	630 "	7LY	54 "
7XL	454 "	7CT	53 "
7JF	371 "	7PA	48 "
7SF	237 "	7RX	38 "
7RM	212 "	7BT	23 "
7KH	141 "	7CR	20 "
7EB	99 "	7DW	20 "
7TR	87 "	7NZ	14 "
7WH	81 "	7BQ	13 "
7CK	80 "	7EJ	9 "

C.w.—

VK7GK	253 pts.	VK7KA	34 pts.
7RY	178 "	7KS	33 "
7GV	94 "	7AB	19 "
7JB	80 "	7LJ	13 "
7BJ	60 "	7CH	9 "

Open—

VK7SM	1290 pts.	VK7OM	250 pts.
7DK	1286 "	7FB	75 "
7ZZ	515 "	7YL	32 "
7AL	378 "		

NORTHERN TERRITORY

Phone—

VK8DI — 173 pts.

C.w.—

VK8HA — 273 pts.

PAPUA-NEW GUINEA AND TERRITORIES

Phone—

VK9DG — 1530 pts.

C.w.—

VK9CJ	165 pts.	VK9MV	18 pts.

Open—

VK9AG	838 pts.	VK9DR	201 pts.
9XI	340 "		

ANTARCTICA

Open—

VK0MI — 990 pts.

SECTION E—V.H.F.

New South Wales—

VK2ZCP	84 pts.	VK2ZWM	14 pts.
2ZSK	66 "	2ZFX	13 "
2ARF	35 "	2ZSO	10 "
2ZCT	34 "	2ZBM	9 "
2ZRU	23 "	2ZMO	8 "

Victoria—

VK3ZCK	60 pts.	VK3AMK	8 pts.
3ZVV	42 "		

Queensland—

VK4ZEP	8 pts.	VK4RG	3 pts.
4ZMW	7 "		

South Australia—

VK5ZDX	53 pts.	VK5ZKB	19 pts.
5ZDA	35 "	5ZSW	19 "
5ZDM	31 "	5FD	15 "
5JK	24 "	5ZEH	11 "
5ZSJ	21 "	5CA	5 "

Western Australia—

VK6ZER — 6 pts.

Tasmania—

VK7ZJG	26 pts.	VK7ZFR	11 pts.
7ZAS	17 "	7DK	5 "
7ZPT	17 "	7ZAH	5 "
7ZTM	17 "		

RECEIVING SECTION

Australian Capital Territory—

J. Hurran	876 pts.
L. Whyte	378 "

New South Wales—

A. Nutley	1083 pts.
A. Ozolins	705 "
J. Richards, L2042	673 "
J. Hillard, L2074	548 "
P. Linsley	501 "
F. McGrath, L3244	469 "
D. Grantley	427 "
C. Middleton-Williams, L3019	410 "
P. Cearns	123 "

Victoria—

P. Forbes	784 pts.
E. Trebilcock, L3042	403 "
P. Solly, L3303	104 "
A. Cash	75 "

Queensland—

D. Clark, L4144	1049 pts.
G. Emboriosff, L4187	396 "
D. Hunter, L4052	396 "
K. Cunningham	229 "
G. Franks, L4010	174 "
N. Boxly, L4195	143 "

South Australia—

J. Ross	917 pts.
A. Raftery, L5085	778 "
K. Prendergast, L5084	670 "
D. Clegg	461 "
A. Wege, L5073	338 "
R. Edmeades	30 "

Western Australia—

F. Price, L6003	675 pts.
M. Ryan	671 "
G. Allen	368 "
B. Prosser, L6038	274 "
S. Marvin, L6038	28 "

Tasmania—

G. C. Johnston	1305 pts.
B. Morgan	940 "
B. Mutton, L7031	914 "
R. Everett, L7043	635 "
T. Cox	435 "
R. Verral	350 "
G. Earl, L7138	331 "
H. Westerhof	208 "
I. Ellings, L7038	198 "

Club Station Entries—

VK3 Vic. Amateur Listeners' DX Club	954 pts.
VK2 S.w.l. Group of Vic., L3100	768 "
VK6LV Leederville C.B.C.	309 "

V.h.f. Contest Distance Table. **See Page 17 for Rules.**

DISTANCE TABLE

	Syd.	Canb.	Bris.	Melb.	Hob.	Adel.	N. Zea.	Dar.	Perth
Sydney	0	160	460	460	660	710	1300/1500	1950	2040
Canberra	160	0	600	290	530	670	1300/1500	1930	1940
Brisbane	460	600	0	860	1110	990	1500/1700	1790	2240
Melbourne	460	290	860	0	400	400	1500/1700	1930	1720
Hobart	660	530	1110	400	0	710	1300/1500	2280	1880
Adelaide	710	670	990	400	710	0	1900/2100	1620	1330
New Zealand	1300/1500	1300/1500	1500/1700	1500/1700	1300/1500	1900/2100	0	2550	3000/3200
Darwin	1950	1930	1790	1930	2280	1620	2550	0	1650
Perth	2040	1940	2240	1720	1880	1330	3000/3200	1650	0

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

HISTORY OF EARLY DAYS

Microscope Department,
University of Queensland,
George St., Brisbane.

Editor "A.R.," Dear Sir,

I am very interested in obtaining the history of our early pioneer Hams and particularly with respect to the early days of Queensland.

I have endeavoured to seek the knowledge locally and it was suggested that it would possibly be more expedient to write to you.

I would be grateful for any information you could make available or for further sources of reference.

If you are unable to assist me, could you pass my request to the Federal Secretary of the Institute.

Looking forward to your reply.

73's, A. M. SIMPSON,
Head, Microscope Department.

SCATHING CONDEMNATION

Editor "A.R.," Dear Sir,

It was with regret that I read in the "A.R.," October, 1966, the scathing condemnation by W. Metzenthen of the article by R. L. Harrison on Transistor Amps. Pt. 1.

I feel that Mr. Harrison is to be congratulated on his initiative in preparing this article and assure him that his efforts are greatly appreciated by many.

If W. Metzenthen wishes to air his superior knowledge I would suggest that it might be more palatable in the form of a constructive article rather than a destructive criticism.

—John Paul Hayden VK4ZBV.

C.W. HOODOO

Editor "A.R.," Dear Sir,

Re Federal Comment, "A.R.," September, 1966, c.w. To break the c.w hoodo I had to use the following method in 1947:

Key an audio oscillator, with headphone earpiece on one ear only.

Have persons in room talk to you on any subject and you reply while you are sending off a newspaper, etc.

—W. N Short, VK3ARA.

P.S. Unfortunately I had learnt the code in 1930 by the dot and dash, when I was able to join the W.I.A. classes in Sydney in 1947, couldn't get above 10 w.p.m. until the above method was used.—Bill.

GOVERNMENT SUBSIDY

Editor "A.R.," Dear Sir,

For many years the Federal Government has subsidised the rifle club movement throughout Australia on the grounds that rifle shooting as a sport has some defence value in the event of war. It seems to me that the Amateur Radio movement has an equally valid claim for requesting Federal subsidy, especially when one considers the noteworthy contribution made by Amateur Radio operators in the last war.

In the event of such a subsidy being granted, there may be some conditions specified by the Government agencies concerned, but I cannot contemplate any situation whereby such conditions could adversely affect Amateur operations.

It seems to me that we have ample grounds for claiming a per capita subsidy for each successful A.O.C.P. or A.O.L.C.P. candidate trained by W.I.A. agencies—by our evening classes, by our correspondence courses and, perhaps, by the Youth Radio Scheme.

Any moneys received on this basis could be applied to the improvement of our training facilities rather than to general W.I.A. administration. In any case, the approval for such subsidies would give the Institute a status at Government level which it lacks at present and would add weight to any further representations made on other matters at Federal levels.

I submit that this is a matter well worth consideration by Federal Executive.

—Rex Black, VK3YA.

MACQUARIE ISLAND

14 Buckley Street,
Sale, Vic.

Editor "A.R.," Dear Sir,

I will be going down with this coming year's Antarctic Expedition to Macquarie Island, leaving Australia at the beginning of December.

It has been suggested to me that someone may be interested in loaning me 6 and possibly 2 metre gear for the duration of 1967. I would be willing to set up a v.h.f. station to attempt to communicate with Australia, rare DX and all that. I haven't any workable 2 m. gear, but hope to be constructing some 6 metre gear during the year, time permitting.

Should anyone be interested in supplying some gear, I would stipulate the following: (1) That the gear be reasonably high power a.m. (c.w.); (2) Compact, (3) Good condition, with circuits, (4) Possibly a rugged aerial; (5) That the gear be well packed and with spares, (6) That the person supplying arrange insurance on the gear. I would take all care but no responsibility for the equipment.

It has also been suggested that a v.h.f. beacon be set up at Macquarie Island. The permission for such an installation would have to be sought through the P.M.G.'s Department and through the Director of the Antarctic Division. If a beacon were to be set up I would like it registered under a separate call sign from my own. I feel this could be worth while. If you're interested please do something about it quickly.

—Rodney Champness, VK3UG.

P.S. When at Macquarie I will be VK0CH.

DX QRO—NOT ON NET CHANNELS

Editor "A.R.," Dear Sir,

With summer and 52 Mc. DX very close I and many others have some concern regards mobile DX.

Mobile nets have waxed and waned several times over the years, but with increased importance of W.I.C.E.N. and the ready availability of complete mobile units suitable for 52 Mc. a.m. conversion, we now have two large and important nets formed on 53.033 Mc. and 53.1 Mc. These are primarily mobile nets, and in S.A. even the majority of base stations are using units identical to those installed in cars and on motor-cycles. A reasonable harmony exists because of accepted net procedures and similarity of power levels for most equipment. However, it is not the local problems which concern us, but those due to DX when it arrives.

When the band opens, local mobile to mobile and/or base contacts will cease due to higher signal strengths from the DX stations. Consequently many of the mobiles will not only prefer, but be forced to use interstate channels, since they are all crystal controlled on one or both of the net frequencies. The co-operation between the mobiles will be of no avail, with all their net procedures, if even one higher powered v.f.o. control station commands the net frequency. Would any considerate operator, having tuneable equipment at his disposal deliberately and continuously use a net frequency whilst some 20 mobile stations have to sit and wait because they cannot shift from his frequency like as he has on to theirs? Whilst signals are good, surely they have as much right, and possibly more, to their net frequency than the one who occasionally puts his v.f.o. on the net allocations.

May I, on behalf of the many net limited mobiles and crystal controlled bases, plead to the v.f.o.'s with "Big Bertha" to find some other spot than 53.033 or 53.1, we have 2 Mc. to use! Surely such a gentleman's agreement is not too much to ask of those few who can help, or hinder, the process and limitations of net operations.

Perhaps it may be helpful to remind net operators of the use of the different channels in different states. Where possible it may be advantageous to include the alternate net, if necessary by diode switching of crystals, even if only for the DX season. A number of VK3 mobiles now have 53.033 Mc. available for the DX, so perhaps 53.1 Mc. may be a help to VK3, 2 or 7, and an occasional call may produce amazing results if an opening occurs.

I call on both frequencies each Monday to Friday, 1640-1710 C.S.T., just in case something happens.

Hoping co-operation helps, best DX.

H. J. Harvey, VK5ZBE.

PROJECT AUSTRALIS

Following a request from Project Oscar, the VK-keyer for Australis has been changed to a HI-keyer. This is in line with the Oscar policy that Amateur Radio satellites should not identify themselves with any national group, but should be representative of Radio Amateurs throughout the world. There will be two to three HI's transmitted by Australis during every ten second identification period.

Some problems have developed in the construction of the flight model of the 144.050 Mc. telemetry transmitter for Australis. While these difficulties are now being overcome, it is expected that the delivery date for the satellite to Project Oscar in California will slip into January next year. All other systems of Australis are working well.

Don Graham VK6HK has been appointed Oscar State Co-ordinator for Western Australia, succeeding Wally Howse VK6ZAA, who has resigned because of increasing business responsibilities. We wish to thank Wally for his hard work on both the Oscar and Australis Projects, and we hope that he will continue to take an active interest in Amateur Radio satellites.

Project Oscar have advised us of the operating frequencies of the Euro-Oscar 2 metre translator satellite. The input centre frequency will be 144.10 Mc. and the output centre frequency will be 145.900. The translator output will be about 1 watt p.e.p., and the passband will be 40 Mc. wide. It is expected that the Euro-Oscar satellite will be launched into an Oscar III-type orbit, about 500 miles high. The approximate launch date is not yet available, as the satellite has still to be tested by Project Oscar, and a 432 Mc. beacon installed.

There have been several enquiries about the names of the VK State Co-ordinators for Oscar and Australis. These are listed below.

New South Wales—Alex Swinton, VK2AAK.
Victoria—Bill Rice, VK3ABP.
Queensland—Laurie Bisgbrough, VK4ZGL.
South Australia—Brian Tideman, VK5TN.
Western Australia—Don Graham, VK6HK.
Tasmania—Peter Frith, VK7PF.

The Project Australis address is:
Astronautical Society, Union House, University of Melbourne, Parkville, N.2, Victoria.

SIDEBAND TOPICS

I am frequently asked what future developments can be expected in the field of Amateur S.S.B. Transceivers. The main brands, Swan SW350 and Galaxy V, have been on the market for almost two years. New and radically different models may soon be brought out, what about full transistorisation?

Well, there is no doubt that in the long run, another 3 to 5 years' time, we shall see things change that way. But the changeover is not a simple process. Several hundred watts peak-output is now considered normal and still hard to get with transistors, if at all. It will always require proximity to a solid, heavy-duty power source. The only transistorised S.S.B. Transceiver now available, the SBE34, still uses tubes in driver and final. So will the Japanese product, which is now almost a year behind schedule, and they are still chasing the bugs out of the prototypes!

Replacing parts of the set with transistor circuits makes only sense if one gains something with it, space-saving or reduction in power consumption. A transistor VFC has no merit as such, still requires a large coil box and certainly complicates temperature compensations. So the conclusion is that for a number of years to come the cheaper popular makes will still be with us as they are now, except for possible minor circuit improvements.

When this appears in print I may still have a few new Swans and Galaxies at the old prices in stock, but they are moving fast now and the new supplies that are sailing will have to suffer price increases (see my August issue advertisement).

SWAN/GALAXY 5-banders, with H.D. supply/speaker units $600
GALAXY duo-band, 40/80 m. full output, ideal for mobile $225
HY-GAIN triband beams: TH3JR, $100; TH6DX, $200.
HY-GAIN verticals: 14AVQ, $50; 18AVQ, $75, yes, all prices are going up.
CDR/ALLIANCE rotators, 220/230v., $200 to £55.
DC-DC mobile supplies, $100 and $120. Automatic keyers $70.
WEBSTER Bandspanner mobile whips, complete, 10-80 m., $50.

USED, RE-CONDITIONED EQUIPMENT

WAGNER 1A 10-80 m. S.S.B. Transceiver, with Wagner a.c. supply/speaker unit $350
GALAXY III 80/40/20 m. S.S.B. Transceiver, VOX unit included $325
Perfect EDDYSTONE 888-A 160-10 m Hamband Receiver, A.M./S.S.B./C.W. . $225
LM-14 Frequency Meter and lots of excellent gear, estate of the late VK2ADC, see Ham-Ads in this issue of "A.R."

Prices quoted are net, cash with order. If you cannot pay cash, **do not** consider **hire-purchase** buying at exorbitant interest and legal charges! See your local branch of the Bank of New South Wales for a personal loan at normal bank interest.

SIDEBAND ELECTRONICS ENGINEERING

P.O. BOX 23, SPRINGWOOD, N.S.W. Telephone: Springwood 51-1394

This telephone number **cannot** be dialled automatically from anywhere **but** the **Penrith** exchange area, it is **not** a **Sydney** exchange number!!!

DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
28 Whynot St., West End, Brisbane, Qld.

My apologies for last month's omission of notes. Man proposes, but God disposes—or if you like, the fates were unkind to me. It was the "wog virulent." Usually this page is a rushed affair without the full attention it requires but this issue I hope may prove a little more comprehensive. There is quite a stock of mail and notes to hand, so here goes.—

NOTES AND NEWS

Rio de Oro: Latest information on this spot is to the effect that EA7ID and EA7JQ are struggling to obtain permits. Hope to be on soon.

Solomon Is.: VR4LN Steve seems very active 14,240. Try 0700 or earlier. QSL W7WLL.

Adelie Land: Paul seems to be very active judging by reports. Look around 14.194 kcs. at 0400z. QSL REF. Gear is Swan 350 to G.P.

Muscat: MP4MAW on 14,303 transceiver at 0200z.

South Georgia: VP8AM, VP8HY both on 14 c.w. Also VP8IQ who is on Falkland Is.

British Honduras: Dick VP1RC, 14150, 2300z. Duration of stay not known.

Spitsbergen: New prefix for here is reported to be JW not LA. JW4NI said to be active. Other new prefixes. Jan Mayen—JX. JX2IN, JX2CI both QRV.

Guatemala: TG0AA, 14 s.s.b. after 0600z. Good for WPX.

Iceland: TF1WJT, WJU, WJW, WJX and WJY all now on 14 s.s.b.

Somali: 6O1AU and PF 21 s.s.b. No times given.

Shoma Is.: W8DGP/KL7 and KL7FRY both QRV 7/14 c.w./s.s.b. The latter worked here on 7010 at 0730z.

Kure Is.: WA7EZW/KH6, 14 s.s.b., 0800z.

Uganda: 5X5AU, FS, IH, JK and KD are the only legitimate ones from this country. Others said to be phoney.

Rockall Is.: Now reported off till next year. Also Kuria Muria Is. trip delayed.

Malagasy Rep.: 5R8AK is on 14,114 listening 14,205 at 0830z. 5R8AL can be worked on 7010 nightly around 1830z.

Philippines: W4BIC/DU1 QRV 1245z, 14,030 kcs. QSL via Buro.

Marcus Is.: Reports indicate that KG6IF is very active from here. FQ given is 14,300 from 1200z.

Bornholm Is.: OZ4GF 14,127 1530z. OZ8KP 14,030 0730z. Both O.K. for Bornholm Is. award. Others on from here are OZ1IF, OZ4PM and OZ4FF. This latter being award manager.

Andaman Is.: At time of writing this Hedge is still very active at 0130z daily on 14,030 approx. QSL to FT Blair or to home QTH VU2DI.

Congo: TN8AA active 21 mcs. 1900z. QSL Box 574, Brazzaville.

Europa Is.: The trip by CR7GF to this spot and later to Comoros, Glorias Tromelin, Aldabra, etc., does not as yet appear to have got under way but should be by the time this reaches you.

Spanish Morocco EA9ED on now from CEUTA 14 c.w. Worked here but no idea of length of operation. Also EA9EO 14,060 2030z.

Des Roches: This has been given country status for DXCC.

Easter Is.: CE0AC. Try 7 c.w., 0440z.

Ascension Is.: ZD8RB is on 21 mcs., s.s.b.

Saudi Arabia: 7Z3AB, 14 mcs., 0300z.

Dominica: HI8XAL, 14 mcs., c.w., 1930z.

Masirah Is.: VS9OC, all bands and modes, 1000-1800z.

Portuguese Guinea: CR3KD, 21 mcs., c.w. and a.m.

Newfoundland: VO1IW, AW, HP, 14 mcs., c.w., 0142-2136z.

Geneva: 4U1ITU, 21 c.w., 2035z.

Vart: VS9A was heard 14 mcs. c.w. this week. Name stated as Bob. QSL via Bureau. No further details at present.

Das Is.: MP4DAN is active from here. QSL DF4AB.

West Carolines, Kusar, Palau Is.: KC6BO is active from here, s.s.b.

St. Pierre and Miquelon. FP8CA active on c.w., s.s.b., 14, 21 mcs. QSL K2QJD.

Madeira CT3AS active 14, 21 mcs., c.w., at times on 21 mcs. a.m. Also CT3AU 14,050 2000z.

Cook Is. Aitaki: ZK1AB is active again here on c.w., s.s.b. He will also come up on 7 mcs.

Albania: We are informed that there are no official licensed stations in Albania. Even though ZA1BE is reported as active 14,038, 2300z.

Trinidad: 9V4VS, 9V4VU both active evenings on 21 mcs., c.w.

Cuba: CM1AR, CO2BO both active 21 mcs., c.w. CM2BL, CO2RL active 14 c.w.

Sao Thome: CR5SP active s.s.b., 14 mcs., low end. QSL W2GHK.

Farquhar: VQ9HB, G2KS. It is rumoured that these will be making a trip to this island for a week's stay, but no details as yet.

Ceylon 4S7PB has daily sked with K6CAZ on 14,222 kcs., s.s.b. 4S7YY is active 14 mcs., c.w. 0100z. Also 4S7DA, 14,0300 kc., 0130z.

Don Miller W9WNV seems to have scrapped plans for Clipperton and Malpelo in favour of the Indian Ocean, reports the grapevine. It is quite possible that he will team up with CR7GF, for they both have what each other needs at the present.

Madeiras Is.: Lloyd and Iris are presently signing CT3AU from here. Their usual frequencies are 14,050 and 21,050, listening 3 up on c.w., and 14,200 and 21,335, listening as directed on s.s.b. Rumoured for possible operation next are Mauritania, Senegal and Laccadives. QSL via YASME, Box 2035, Castro Valley, California. 94546.

Kure Is.: K3QFH/KH6 is a new station active from here. He promises to be quite active in the coming months.

Turkey: TA2FM, 14,004 at 2100 G.M.T., TA2FG, 14,030 at 1830 G.M.T., and TA2AC, 14,025 at 19-2200 G.M.T. (QSL via K4AMC), are new stations active from here.

Aldabra: There is news that VQ7HY will be on air from here for about six months.

ACTIVITIES

Peter VK2APN records some fb 7 mc. c.w. QSO's. FB8YY 2045, CM2QN 0630, HK1BDA 1035, 8V1MX 2000, VP6AK 0800, 5R8AL 1430, PY1NEW 0700, ZL3AD 1000, YV1AD 0715, 4X4MR 1215, PJ3CJ 0700, VP8BP 0800, WA4NXC/VP7 1110, W0GTA/ZF4 2000, and CE0AC heard 7020 0515. All times G.M.T. Best QSLs received were UJ8KAA, HI8XAL, TI2PZ, UB5ARTEK, 5Z4JX, PJ2MI, EP2BQ.

(Nice list Peter, please send more.—Al.)

Henry VK8HA writes to report on conditions generally and his doings on 7, 14 and 21 mcs. On the former band European QSOs are possible around 0730 and 1830z, ON5ZO was worked both ways during one 24-hr. period. Some 20 mx prefixes logged were 8W8DD, F2NB, ZD8J, OH1AD, OH8AD, and very many other European prefixes.

(Keep me posted please Henry.—Al.)

Len VK4CK provides on specific list but gives a run-down on conditions from his QTH on the Darling Downs. JA, W and an odd 8V1 audible 28 mcs. from 0100z. Plenty Asian and W's on 21 mcs. during the mornings. 28 mx open each day from 0400z to Europe on LP and taking SA on the way.

Dud VK4MY now seemingly converted to the s.s.b. ranks worked this past week or two KZ5EX, XE2CW, SV1BH, FB8YY, CN8BB, VP7EA, ZS4OI, DL8RM, VK0MI, KL7CKQ, M1B San Marino, VR4LN Reef Island, KG6IF Marcus, 5N2AW, etc., all 14 mcs. (Nice work Dud, keep it up.—Al.)

Barry VK5BS has been appointed VK-ZL rep. for the QRP Club. So if you want to join go ahead and write. Barry would like to put out a quarterly QRP news sheet, DX and Social (if he gets enough support), so do your bit and send any news you can and supply him with any QRP call signs (and there are a lot active) you know about.

(Any QRP news appreciated here Barry. I get very little.—Al.)

Greg Johnston writes with information of activities of VK0MI for whom he is QSL manager. It seems someone has been pirating MI's call. The usual story. Greg has been getting QSL's from overseas for QSO's not in VK0MI's log. I quote him. "Be suspicious of the call VK0MI on c.w. on frequency other than 14,060. Re the QSL situation. I will only QSL those for the R.D. Contest on request, as there are some 200 QSO's involved. Already some 300 cards have been sent out to 30 odd countries and 40 states. Unless IRC's and S.A.E. are sent all cards will be sent via bureau." Latest QSL's received by VK0MI are GI3OQR, EP2AM, ZS6LW, VK3DJ, on a.m. OK1AKQ, EA2CR, VR2DK, UA0KCA, PY2SO, PY2CQ all 20 c.w. All cards for MI, c/o 3 Inglis St., Newtown, Hobart. Col on Macquarie Is will QRT late November or early December. The call VK0MI may be used by his successor but it is not known for sure. Greg Johnston also may continue as QSL manager Col has worked some nice ones during his stay. Here are just a few: EP2AM, GZRO, GI3OQR, PA0HBO, SM5BYG, XE2YP, ZS5JM, ZS6LW, all on phone. EA2CR, G2BVN, G2LB, HC1TH, KB6BY, KR6JZ, OA4FW, VS6EN, PY2SO, PY2CQ, UW0IX, UA0KCA, UA0DV, UA9OH, VE3AAZ, VE4OX, VE6JH, VE7MT, YO6CF, ZC4TK, 9M2LO, on c.w. mainly around 0700z.

Ken VK3TL reports his usual choice ones on 20 mx: CT3AU, CM2WS, DM4WPL, EI3S, GD3RWF, GD6LA, GW8YQ, HA0HR, IS1FOL, I1AUM/MI, SL0AX, SM1CVJ, SV1AB, VP2GS, XE3PI, VP1PV, YS2RC, ZC4CL, 5W1AZ, 6W8DD, 9G1FY. QSL's received FK8IE, FK1JB, EA8EO Spanish Morocco, HC3CRC, KS4CC, VO1FB, 4X1DK, ZS8H, etc.

QTH'S

8N1BG—H.Q. British Ghurkha. L. of C. Dharan, Nepal.

VS6AZ via K6GMA; LA1EE/P via W3GHK; HB0SJ via W2CTN; FL8MC via W7WLL; F0CH/FC via HB9TL; CT3AR via K8CYG; VP8RS via K7UXN; KL7FRY (Shoma Is.) via KL7 bureau.

SUMMARY

Conditions are unquestionably on the up and up. There is DX on all bands now at some period of the 24 hours cycle. The signals are overall stronger too, and consequently easier to work. This should be an incentive to brush the cobwebs off the rig, and at least, try a CQ. There's a variety of prefixes nightly on 20 mx at 1300z.

My thanks to the column's contributors.

73, Al VK4SS.

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CONTEST CALENDAR

12th/13th November: R.S.G.B. 7 Mc. DX Contest (c.w.).

13th/14th November: International OK DX [illegible] (c.w.,.

19th/20th November: R.S.G.B. 2nd Top Band (1.8 Mc.) Contest.

26th/27th November: "CQ" World-Wide DX Contest (c.w.) For rules, refer October 1965 "Amateur Radio."

10th Dec./15th Jan.: Ross A. Hull Memorial Trophy V.h.f. Contest.

11th/12th February: John Moyle Memorial National Field Day Contest.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK2AHO	308/321	VK4HR	261/277
VK3MS	309/330	VK3JZ	249/264
VK5AB	296/312	VK3TL	241/245
VK6MK	293/310	VK2ADE	233/237
VK6RU	292/315	VK2APK	217/230
VK4FJ	273/290	VK2AAK	215/219

C.W.

VK3KB	315/338	VK2AGH	278/288
VK2ADE	291/313	VK2EO	272/283
VK2CX	290/311	VK2NC	266/286
VK2QL	288/308	VK3ARX	261/269
VK4FJ	294/306	VK6RU	250/271
VK3AHQ	276/288	VK4HR	242/265

Amendments:

VK3TL	236/239	VK3RJ	229/242

OPEN

VK2ADE	308/329	VK2ACX	278/300
VK2AGH	303/321	VK2VN	278/290
VK6RU	296/321	VK3ARX	270/278
VK6MK	295/312	VK3NC	267/287
VK4FJ	291/312	VK3TL	260/264
VK4HR	279/301	VK2APK	255/263

Amendment:

VK4PX 137/141

SWL

Sub-Editor: D. GRANTLEY, W1A-L3022
P.O. Box 222, Penrith, N.S.W.

Over the past two weeks I have been through log books dating back to 1937 when I moved to VK3, in order to compile an accurate record of countries heard on the various bands and modes, and also a check was made of hundreds of QSL cards to record similar data. The figures and statistics extracted are of little interest, and I won't bore you with them except possibly to point out that of 298 countries heard, 282 were on 20 metres, and of those 282 were recorded from c.w QSO's. Many interesting comments were noted beside log entries, one in particular extracted from an EI operator who had returned to c.w. to quote "get back amongst the good ops.," or the two s.s.b. stations, a KH6 and a W who had to resort to c.w. to finish their contact, a VK3 giving a VK7 and on an a.m. QSO, then asking him to repeat his handle as he didn't get it, and so on, a W operating /A mobile searching for an aircraft presumed lost off KH6, the ill-fated Yasme in her travels, W8OLJ on "Project Hope," a c.w. race between ZB2AFZ and a KG6 whose call I forget. These two fine operators got to such a speed that I had to use a tape recorded to take them down at 7½ ips, and replayed at 3¾ ips to get them down to a readable speed. And while all these comments were read and the events remembered, it was the check of VK QSL cards which gave me the most pleasure. For years I have been sounding off in no uncertain manner about Amateurs and their lack of interest where the s.w.l. was concerned. Yet here in the old shoe-box was a far different story. Words of encouragement, offers of assistance, perfectly filled out QSL cards, advice and friendly words even when a report which they received could have been of no assistance to them whatsoever. And above all, friendly help and guidance from senior Amateurs and former listeners, all anxious to do the right thing to a green newcomer. I realise now, that if I had not met with this type of encouragement I would have given radio away as a hobby long ago and, I would like to take this opportunity of thanking these fellows one and all for their interest, and apologise for any harsh words which I may have said in the past on the subject of Amateur/S.w.l. relations.

Band Conditions: In general conditions on 20 are much the same as usual, with some unpredictable openings such as we had a few nights ago, when the band opened at 1000z to Europe with stations coming in from all over the Northern African and European Continents. The 15 metre band has been very spasmodic, with some good openings in the mid-afternoon, particularly in VK6, whilst here in VK3 the band is often open as late as 7 p.m. 10 metres is on the improve, but little other than Pacific has been reported, apart from W's. 40 metres, despite the QRM, still provides plenty of DX in the early mornings and is always wide open to W and the Pacific in the evenings. Reports on 80 vary from fair here in the eastern states. I heard a KL7 at 8 p.m. on 26th September, to excessive static over in VK6, where similar conditions have prevailed on 40.

Did You Hear? A flashing c w signal on 7 mcs. on 25th September at about 8 p.m. local time? Yes, believe it or not, Jock White ZL3GX was actually calling CQ looking for a contact which he promptly received. FK8AU on 14 s.s.b. with a signal which nearly popped the front end of the AR7? CR3AS very weak, but right in the clear on 7 mc. working a W6. An unannounced (?) TR8AG made an appearance on 14 c.w in mid-September with every signal in Japan on his back? Fantastic opening on 10 metres about 8 a.m. local time on Sunday, 25th, when according to Mac Hilliard 5 by 9 signals were pounding in from areas ranging from W3 to VK9 and JA. Shades of 1938, when this band produced some of the finest signals and best DX on the air.

Around the Shacks. Firstly over to Bryan Prosser L5088, who reports in per medium of a very fine tape. Very little listening done by Bryan this month, with HL9, W, G3, KH6, XE, VP7 and HB9 being the only calls heard on 20. The lower bands have been too noisy to use. Inward QSL's were received from F9YI, VS6DS, 9M6AP, CT1PK, KX6BW and KC6SZ (West Carolines, Yasme)

From Laurie Wescombe L5079 comes a letter which clarifies the position re the reforming of the VK5 s.w.l. group, it seems that a few months ago Laurie tried to get the VK5 gang together once more, but met with very little success, however, should any readers wish to contact Laurie on this matter his address is 4 Miller Terrace, Blackwood, S.A. To hand this month is a letter from Ralph Cooper, of Liverpool, who enquires about inwards QSL cards. I would like to point out once again that Charles Abernethy, 30 Urunga Parade, Miranda, is the VK2 S.w.l. QSL manager, and all information on this subject is in his capable hands. All VK2 s.w.l. cards reach his QTH, and if you are using the bureau it is advisable to keep a stamped addressed envelope in Charles' care for returns. Ralph, who is a W I A member as L3054, also uses the call of RA3160, issued by the N.Z. DX R.A. Ernie Luff L5060 is still doing well with the AR88 logging such prefixes on 20 s.s.b. as FK8, UG6, DJ KC6, HB9, CR7, PJ5, YB1, PA0, CT2AN, M1B, CN8, 5V1, GW3, KZ5, GM2, OH7, UC2, plus ZL4CH and many others. Inward QSL's for the month were ZD7RH, 9R8AK, ZL4CH, ZC4KF and WA4ICB. With 94 countries heard Ernie is getting close to the DXCC, however, in the process he has collected several of the I.S.W.L. awards. Mac Hilliard has been hearing some good signals on 10 metres, particularly on Sunday, 18th September, when W6, W9 and KH6 were really solid, these being followed by an opening into JA and other Pacific areas.

Alan Raftery L5095 dropped a note to supply some DX QTH's. Here at L3022 I have been looking around on the 7 mc. band once again, and despite the heavy commercial interference, JA1DYU 8, W CR3AS, VR2DK, FO8BJ, KL7FRY, KH6HR, KH6IJ, HI8XAL, HK3CA, UA0LJ were logged. On 80 metres, despite the use of my much-improved CR100, I heard only KL7, apart from VK and ZL. 15 metres revealed nothing of interest, but 20 was another story by far. TR8AG as previously mentioned was the most acceptable logging here, being country number 298. I won't take up valuable space by elaborating on 20 metres, suffice to say that it is still by far the best band no matter which mode of reception you favour. Inward QSL's here were FK8AC, ZS2E, several VK's for QRP awards, OD5BZ, these taking the score a little higher up the ladder.

DX News. Very little of interest this month, other than some QTH's of interest. KC4AAA/MM and CE9ZI have WA5ENK for manager, VP8CW has been active from the Falklands, the two /MM's mentioned here are one and the same, using the particular call to suit their operating area. Vessel is the U.S.N.S. "Eltanin." VE9MB is a lightship off the coast of Nova Scotia. HB9XJ/MM has regular nightly skeds at 1000z and 1200z on 14,230 if you happen to be chasing the mobile award. HC1BM "Buzzy," says QSL to W3CQZ. 5B4TC, 5L3JR, KA5RC and 9M4LP all go via W2CTN. W1BPM is manager for both TR8BW and TT8AW, whilst TN8AF goes via the REF. Cards for W1BNH/MM go to his home QTH, whilst 3L1HX's manager is G3RAM. TR8AG's QTH is B.P. 157, Libreville, Gabon, and that of TR8AD is B.P 1025 same town. 9M6AP says QSL via G3TXE, OA3T says QSL to Padre Ben Meyer, A P T 100, Huarez, Peru. Can anybody assist Alan Raftery with the QTH of 9M4LT, as his card was returned? OK4CM is /MM, reports to OK2UL, Josef Straka, Box 44, Malacky, Czech. All reports for OA3T go to Fred Gleeson, 3413 Talisman, Louisville, Kentucky, U.S.A. W9ADT/MM is active from S.S. "Green Bay," and his QSL address is Box 53366, New Orleans, La. Recent additions to the I.S.W.L. from the DX ranks are HP1JC, HK4PZ, OW5TOB 6Y5RB and MJ, HI8JSM, TG9EP, 1T1AGA, PY2DBU, 9K3AU DJ5XI YV5BZ, MP4TBU, VE8WU and F8RU. QSL's for these Amateurs can go via the I.S.W.L. Bureau, or if using your local Bureau mark your card "I.S.W.L. BUREAU."

Step Press. First item of interest is a letter from our good friend Peter Drew. Peter, as you know, is doing his national service at present. Should anybody care to contact him, the QTH is 5714494, Sig. P. Drew, E. Comm. Wing, School of Signals, c/o Milpo, Ingleburn, N.S.W.

DX LADDER

	Countries Conf.	Countries Hrd.	Zones Conf.	W States
E. Trebilcock	293	298	40	50
B. Prosser	197	241	31	43
P. Drew	193	205	28	40
W Smith	145	214	25	7
D. Grantley	143	200	29	40
A. Westcott	108	190	24	11
G. Karl	103	188	24	13
M. Hilliard	88	240	22	14
K. Luff	84	172	21	23
R. Halligan	83	128	22	7
C. Abernethy	70	167	23	14
A. Raftery	69	169	26	11
R. Mutton	66	102	26	15
B. Mackintosh	43	166	20	8

Secondly, chaps, in view of the mail situation at this time of the year, could I have any notes as early as possible.

QSL Ladder. This will be the final appearance of this feature for 1960, congratulations to those who have climbed higher, particularly to Ernie Luff for his advancement, and of course to our No. 1 listener, Eric Trebilcock, for his consistent operating, and exceptional achievements in having and maintaining such a fantastic Heard/Confirmed ratio.

That winds it up for another month, chaps, 73's, and get amongst that summer DX.

de Don L3022.

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NEW CALL SIGNS

JULY 1960

VK1JT—J. P. Talbot, 4 Charlotte St., Red Hill.
VK1PA—J. W. Talbot, 4 Charlotte St., Red Hill.
VK1VF—V. F. Burnham, 10 Dawson St., Curtin.
VK2AJJ—K. B. Brown, 73 Western Cres., Gladesville.
VK2BAJ—I. E. Treacy, 139 Amiens Av., Millperra.
VK2BLR—Lakemba Radio Club, 33 Rogers St., Lakemba.
VK2BRH—R. M. Harrison, 7 Edwards Rd., Wahroonga.
VK2ZGX/T—D. W. Bridge, New Tribes Mission, Plumpton.
VK2ZGU R. G. Comrie, 30 Cambridge Av., Raymond Terrace.
VK2ZHN—R. J. McHardie, 38 Beattie St., Jamberoo.
VK2ZIG—R. G. Henley, 513 Blaxland Rd., Eastwood.
VK2ZJQ—J. W. Rufus, 9 Bridge Rd., Homebush.
VK2ZKG—J. K. Gibling, 304 High St., Chatswood.
VK2ZMV—A. A. Griffard, "Woodlands," 13 Prince St., Springwood.
VK2ZNG—A. R. Marjoram, 3 Francis St., Epping.
VK2ZOR—F. A. Blackwood, 9 Lavenders Av., Panania.
VK2ZPE—E. P. Clark, 23 Ruby St., Yagoona.
VK2ZPN—B. L. North, 10 Eastern Av., Shell Harbour.
VK2ZTE—R. G. Gibson, 142 Connels Pt. Rd., South Hurstville.
VK2ZYM—R. C. Morgan, 24 Central Rd., Beverly Hills.
VK3FE—J. C. Beckett, Station: Everest Cres., Olinda; Postal: P.O. Box 33, Olinda.
VK3ABU—R. L. Brownbill, 43 Nelson St., Sandringham.
VK3AOJ—J. M. O'Kelly (Rev.), St. Mary's Presbytery, Duke St., Maffra.
VK3APO—P. A. Orchard, 1 Sunlit Court, Moorabbin.
VK3ATV—J. F. O'Toole, 12 Mark St., Rosebud.
VK3AZS—T. P. Said, 31 Kilpatrick Av., Shepparton.
VK3ZQM—B. D. Mitchell, 18 Donald St., Highett.
VK3ZQQ—R. F. Casey, Lot 4, Floods Rd., Warrandyte.
VK3ZSI—R. A. Flack, Lot 77, Lawrence Rd., Mt. Waverley.
VK3ZSQ—B. Gardiner, 83 Edinburgh St., Clayton.
VK3ZSU—G. Sutherland (Dr.), 49 Darling St., South Yarra.
VK3ZTO—J. T. Bayley, 9 Dominic St., East Camberwell.
VK3ZWH—H. L. Wickes, 39 Alford St., Warragul.
VK4OM—L. C. Morrison, Station: Unit 2, "Karoonda," Mary Avenue, Broadbeach; Postal: 44 Aaron Avenue, Hawthorne.
VK4ZFD—R. F. Dannecker, 32 Pohlman St., Southport.
VK4ZKI—R. K. Ivins, Duporth Avenue, Maroochydore.
VK4ZKJ—E. W. Davis, 39 Miva Street, Coorey.
VK5EY A. W. Holt, 43 Wood Ter., Whyalla.
VK5SK—R. W. Streeter, 194 Mt. Gambier Rd., Millicent.
VK5UK—E. Owen, 30 Symonds Cres., Clovercrest.
VK5ZA—R. G. Jolly, 16 Melville Rd., Paradise.
VK5ZAZ—C. L. Price, 13 Fleming Av., Ridgehaven.
VK5ZRB—R. L. Bubner, 9 Brighton Rd., Glenelg.
VK5ZRZ—W. S. Baynes, 20 Strathapey Av., Hazelwood Park.
VK6RH—R. Hazlett, 100 West Coast Highway, North Beach.
VK6ZBA—C. A. Lewis, 77 Stubbs Ter., Daglish.
VK6ZFI—K. M. Cole, 28 James St., Kellerberrin.
VK7ZDF D. V. Johnstone, 9 Somerton Cres., Moonah.
VK7ZHF—H. J. Ferrall, 9 Willowdeene Av., Sandy Bay.
VK7ZWN/T—W. J. Nickols, Station: 2 Ebden St., South Hobart; Postal: 31 Bay St., Burnie.
VK8JR—R. J. Linaket, R.A.A.F. Base, Darwin.

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, W.2, Vic.

Well, here we are again with a very busy month ahead with the VK3 V.H.F. Convention, the Jamboree on the Air, writing articles for "A.R.," etc., anyway news this month comes from VK4, VK5, VK2, VK3 and VK6 from Graham VK6ZDB who is making a trip to Brisbane with Wayne VK6ZDD. Included in the notes are the first reports of 6 metre DX of the Season.

Here's a thought for those who would like to keep the 4 mes. that we have at the moment on 2 metres, after listening on 2 metres for months I have noticed that over 80 per cent. of the activity is in the 144-145 mc. segment. What about using some more of the band, e.g. use 146-148 for crossband and local a.m. nets and those long rag-chews. I for one will be tuning 145.5 mc. down in future, so why don't some of you others do likewise and show that we want to keep 2 metres, remember the next I.T.U. conference is only two years away and almost all countries are pressing for more space in the radio spectrum.

Talking of the I.T.U., don't forget to send your donation to the W.I.A. I.T.U. Fund, whether it be large or small it will still help the Institute to send a representative to the next conference and give some backing to Amateur representatives from other parts of the world.

73's, Cyril Maude, VK3ZCK.
V.H.F. Sub-Editor.

P.S.: If the gentlemen of VK3 cannot afford a typewriter would they please print ALL NAMES and PLACE NAMES as my maps do not show all the pimples and one horse towns in N.S.W

NEW SOUTH WALES

433 mcs. activities in VK3 are increasing at a very satisfactory rate. Currently known operators on 433 are VK3's ZCF, HL, ZRU, HO, ZAH, ZAC, ZHK and several others. There are also many stations constructing gear for this band.

Two metres is becoming quite crowded with a batch of new calls appearing. Some heard to date being VK3's ZGL, ZMV, ZJQ. The group is endeavouring to encourage stations to use the second megacycle. This will not only reduce crowding but will show the authorities that we do in fact justify having a reasonably wide band.

Don't forget the New Year's Field Day which is coming up as the last event of this year and the first event of next year. Last year David VK3ZVW worked ZL from Mt. Koeciusko as well as many other long hauls, so all you v.h.f. DX-ers get with it and help to make this one the best yet.

A very successful Field Day was held in mid-September at the Marsden Park Airstrip. This day consisted of pedestrian fox-hunts, treasure hunts, and ordinary mobile fox-hunts. Approximately 80 attended and had a very good time. This fine day was organised by John VK3ACK and Mac VK3ZH and was very well conducted.

73's till next month.

Stephen VK3ZSK.

HUNTER RIVER BRANCH

80 Mc. This band has been quiet, except for one DX opening on the 10th September to VK5 and the lucky one to declare the "DX Season Open" was Bill VK3ZWM when he saw funny things happening to Channel 2, and going to the shack heard a nice lot of VK3 signals that were very strong for quarter of an hour then the band closed about 7 p.m. Stations were heard for some time but were too weak to work because of the fading, Bill worked 3ZDR. 3FD and others. The 52 mc. net still operates each Saturday and Sunday morning at 10 a.m. Gordon 2ZSG and Frank 2ZFX will be airborne in the next week or so on this band, and Fred 2ZAP also has gear well on the way.

Kev 2ZKW has a blockbuster well on the way for 6 metres

144 Mc. This band has been rather quiet except for Monday nights, when most of the boys are about to hear our local broadcast on 3.5 mc relayed by Gordon 2ZSG on 144 mc., most stay around for a rag-chew afterwards.

Conditions have been poor during the month as we have had days of "strong westerly winds" and thick dust which makes conditions poor on 2 metres. Most of the boys are getting gear ready for our "Hunter Branch" Convention at the end of the month, some getting mobile gear ready, others testing sniffers and the like.

Ron VK1ASJ has been on at nights with his new transmitter, built by Mac 2ZMO, and is making a lot of new friends.

Conditions to Sydney have not been the best, Col 2YJ and Tony 2ZCT can work into Sydney most nights probably due to their excellent location. 73's, Mac VK2ZMO.

VICTORIA

The activity on the bands in VK3 over the past month has not been over exciting except that on Saturday, the 17th of September, the boys operating on the 53.632 mc. a.m. net heard a very strong station breaking in and announcing himself as VK4ZPL but alas we were unable to work Peter.

Jim Goding VK3ZGG, who has recently returned from an extended stay in the U.S.A. where he obtained the first licence (open to doubt.—Ed.) issued under the new reciprocal licensing scheme. Jim spoke about Amateur activities in the States including field days and spoke about one Amateur who has an 8 line set-up in almost every room in his house. Jim continued his talk with some details of the work that took him to the States and showed a colour film which demonstrated the research work that he is engaged in at the Melbourne University. Other activities in VK3 include fox-hunts and scrambles, at the moment both of them are only held on 2 [illegible].

Well, until next month. 73's Cyril VK3ZCK.

QUEENSLAND

The September V.H.F. Group meeting was of some importance to members of the group. Twenty-five members attended which is somewhat of a record. The main business of the night was a group discussion on the need for a net frequency for 6 metre mobile work particularly in Brisbane.

While it was realised that some mobiles were equipped with 53.632 mc. gear, it was felt that the further removed the chosen frequency was from the 52 mc. band edge, the better for all concerned. Consequently a frequency of 53.965 mc. was chosen because of a readily available supply of crystals. Already about 45 crystals have been purchased from the group. At a cost of only $1.00 per crystal, the new net frequency seems very attractive. Crystals are obtainable from the Treasurer of the V.H.F. group, Royce VK4ZRH.

Mobile net operation will begin in October after the transmitter hunt on 30th September. Only one or two stations have been heard working at night in Brisbane. The new net frequency should allow more interference-free operation at night on the 6 metre band.

A number of new call signs have appeared on 6 metres of late. Those being heard include 4ZSC, 4ZDD, 4ZRP, 4ZPC. The question now being asked is "Does the Civil Aviation Dept. use minitran transmitters?" For those willing to turn their beams north the following may be heard on 6 metres of a Sunday morning, VK's 4ZCA, 4PU, 4SI, 4ZMC, 4ZKC. These stations can be classified as country DX.

The mobile night held early in September was a terrific success. Altogether a total of about 23 call signs were present at the starting point near Surfers' Paradise. The mobile night lasted until 2300 hrs. and at times mobiles were not being chased only by other mobiles! The V.H.F. Group in VK4 are very informal. Indeed a meeting (official of course) may be convened at any unusual time. The mobile night was not an exception to the rule. Two meetings were held during the night. At the second meeting it was decided to purchase some ammonium bifluoride for the use of the group. Have you ever seen a v.h.f. group call a meeting during a mobile night in the middle of Surfers' Paradise to decide to buy some ammonium bifluoride?

Personally, I can remember V.H.F. Group meetings being held in the middle of general meetings of the Institute. Such is the informality of the group. Have you heard that as a special service to the v.h.f group, TVQQ will now radiate a spurious signal on 53.965 mc.? 73, Peter VK4ZPL.

SOUTH AUSTRALIA

At last the benign heavens have condescended to allow 6 metre operators from within the confines of VK5 to again work interstate via Sporadic E communication. The afternoon of September 10 last saw the monitoring of Channel 0 in Brisbane at strength 9 plus for hours on end by many VK5 operators. Consistent and sustained calling in the VK4 direction were to no avail as not the slightest inkling of an Amateur signal was heard. However, according to the saying "All good things come to them that wait," an opening on that evening to VK1 and VK2 rewarded those who still had their ears "glued" to the receiver. Only one VK1 in 1ZCG was audible, at R5 S8 plus nonetheless, and approximately seven VK2's were available to the tmultuous VK5 gathering. As usual the signal from Albert 2ZFB was the thundering knockbuster of old, which should at this stage tend to quieten the sceptical band opening forecasters who have been predicting the gloomiest of band openings for the coming season. The following morning, the 11th September, at 1000 hours C.S.T. the VK6 beacon was audible at strengths up to S7 eventually disappearing back into the noise at approx. 1130 hours. Only one signal from VK6 was heard, in that of VK6ZCM, who incidentally finished up being much sought after by the newly licensed Amateurs in VK5. Speaking of new licensees, VK5 is currently being inundated with them, which is beneficially adding to 6 metre activity in particular, with the birth to the bands. The latest additions to the 6 metre band have been 5ZIA and 5ZAU

On the other hand though, 2 metre activity just doesn't exist at the present time. Ily activity I refer to serious and practical applications of the art devoid from net activities. However, some consolation is available in that Jim 5ZMJ from Fort Pirie transmits a fine signal into the Adelaide area on Saturday and Sunday mornings on 2 metres, which is the only time that Jim has the opportunity to get on the air without his naive neighbours complaining about t.v.i.

However, with the coming DX season promising to be all as good as previous years, the chances of scoring an exotic 2 metre DX contact should create increased activity in the ensuing months.

So until next month, when I look forward to detailing all the DX heard and worked by the VK5 fraternity. 73's, Colin 5ZHJ.

WESTERN AUSTRALIA

As usual for this time of the year the level of activity on the v.h.f. bands is not particularly high and the bulk of operating is being done on the f.m. and a.m. nets on 6 metres. For the information of those in other states the main net frequencies are as follows 6 metres f.m., the main channel is 52.456 mcs. with about 30 mobiles and 18 base stations capable of operating here. The secondary channel is 52.525 mcs., however, this is not often used and only relatively few stations have crystals for this channel.

6 metres a.m.: The main channel here is 52.504 mcs. with about 15 units at present in use. There are several other frequencies in common use in VK6 but the number of stations using these is not great and could scarcely be referred to as [illegible].

There is negligible activity on 2 metres in VK6 and there are no established nets in operation on this band.

A v h f scramble was held on Sunday, the 18th September, and quite a high level of activity resulted, thus proving that given the incentive there is a large number of Amateurs capable of operating on the v.h.f. bands. The last fox-hunt was held on Saturday, 26th September and run by Graham VK6ZDB and David Priestley and even though the aerial system was faulty the hunt was deemed successful. The winner was Tony VK6ZDT, who made the 250-mile trip from Albany for the week-end

Andrew VK6ZCN, formerly from Bunbury, has now been tarnaferred to Exmouth about 800 miles north of Perth and he hopes to be set up and operating in the near future on both 6 and 2 metres. 73's, Graham VK6ZDB.

—. . .—

Publications Committee Reports

At the October meeting correspondence was received from VK's 3QL, 3YA, 3ARA, 3UG, 3ZOM, 3ZRY, 4ZAE, 4ZHV, 5NN. Technical articles were received from 2PY, 3QL and 3AEK.

The proposed V.H.F issue of "A.R." has been postponed, as the technical articles promised have not yet arrived, but they are in course of preparation and we anticipate the issue will be published early in the new year.

A large number of "A.R.'s" are being returned each month due to addressees not notifying change of address. Divisions are requested to check their mailing lists carefully before advising the non-arrival of the magazine.

The Call Book is running a little behind schedule, but it is still expected to be ready well before Christmas. Due to the increase in paper and printing costs, the committee has been forced to consider what additional material will be included and what will be omitted.

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115-145 Mc. Employs heterodyne exciter in tx. TT15 p.a. Single xtal locks Tx and Rx on same frequency. In-built modulator. Supplied with 4.86 Mc. xtal. $30, circuit $1.

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160 metres to 6 metres, Amateur Bands only. 3.5 Mc. xtal band edge marker, xtal supplied, product detector for s.s.b. $240, 10% discount for cash.

★ **SCR522 V.H.F. TRANSMITTER/RECEIVER**
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★ **TR1934 TRANSMITTER/RECEIVER**
Approximate frequency, 200 Mc. Contains 46 miniature tubes, $30.

★ **3J160E HIGH POWER TRIODES**
120 Mc. full ratings. Heater 10v. 29a., anode max. volts 3000v., anode max. current 1000 mA., r.f. output 2150 watts. $8 each.

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★ **VALVES**
EF50, 20c ea.; 7C7, 10c ea.; CV131, 6CQ6, 50c ea.; 6AC7, 20c ea.; 6AL5, 20c ea.; 6C4, 6AM5, 50c ea.; QQE03/12, $2 ea.

★ **SIGNAL GENERATORS**
TE22 Audio Generator, freq. range: sine 20 c.p.s. to 200 kc., square 20 c.p.s. to 25 kc., in four ranges. Output, 7v. p-peak. Output impedance, 1,000 ohms. Price $42.

★ **METERS, P25 TYPE**
0-500 uA., $5.25; 0-100 uA., $6.95; 0-1 mA., $4.50; 0-10 mA., $4.50, 0-50 mA., $4.50. Full range of Meters and Multi-Testers available.

★ **CO-AXIAL CABLE**
UR70 72 ohms, 3/16 inch diam., in 27-yard rolls, $2 plus 75c pack and post. In as-new condition.

★ **RA1B COMMUNICATIONS RECEIVER**
150 Kc. to 15 Mc. in six bands. B.f.o., etc. Genuine original condition, with a.c. power supply, $70.

★ **TRANSISTORS**
Brand new. OC72, OC44, 2N132, OC86, OC45, 80c each. AT1138 Power Transistor, 30w., Class B, $3. Also Diodes: OA71, OA81, OA95, 35c each.

★ **SR700A TRIPLE CONVERSION COM. RECEIVER**
80 metres to 10 metres. 1st and 3rd oscillators xtal controlled, 3.4–4.0 Mc. tunable i.f., selectable sidebands, 85 : 1 geared dial, v.f.o. output for transceive operation, selectivity: 0.5, 1.2, 2.5, 4 kc. Internal 1 Mc. xtal calibrator (xtal supplied). Undoubtedly the finest receiver ever to come out of Japan. $500, 10% discount for cash.

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Comprises two i.f. stages, ceramic filter, diode detector, 55 db. gain, NPN silicon transistors, d.c. requirements 6v. d.c. 2 mA., size 1½ x ½ x ½ inch. $8.70 inc. tax.

★ **TR16A MULTIMETERS**
100,000 ohms per volt. Ranges, d.c. volts: 0.5, 2.5, 10, 50, 250, 500, 1K.; a.c. volts: 2.5, 10, 50, 250, 1K; d.c. current: 10 uA., 1 mA., 25 mA., 250 mA., 10 amp.; resistance 20K, 200K ohms, 2 megohms, 20 megohms. To clear, $25.95.

★ **POTENTIOMETERS**
Wire wound, 40c each; carbon, 25c each.

★ **RESISTORS**
½ watt, I.R.C., Welwyn, Eire, Ducon, Philips, $2 per 100.

★ **¼ H.P. 2-STROKE MOTORS**
Ohlsson and Rice. Brand new, just imported from America. Weighs only 5¾ lbs. 6,300 r.p.m., supplied with 3 : 1 reduction gearbox, output 2,100 r.p.m. Ideal for driving Alternators for Field Days. Fuel consumption 1 pint per hour. $30.

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Beginners are welcome, ask Jim and Laurie Gardiner any questions. They are Amateur Radio operators and will be only too pleased to assist.

★ **CRYSTALS**
Personal shoppers only, $1 each.

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3AP1 c.r.o. tubes. New in cartons, $1.25.
3000 type Relays, 50c each.
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Speaker Transformers: 7000 ohms to 2 ohms; 10,000 ohms to 3.5 ohms; 50c each.
9-pin skirted P.T.F.E. Valve Sockets with shield, 50c each.
Irish Recording Tape, Mylar Base: 150 ft. x 3 in., 75c; 900 ft. x 5 in., $2.75; 1150 ft. x 6¾ in., $3.50; 1800 ft. x 7 in., $4.75.
3 uF. 1000v. d.c. Block Capacitors. Only 25c each or $2 per dozen.

★ **MINIATURE CAPACITORS**
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

The A.R.R.L. advise the following QSL Bureau changes effective immediately.—

W3, Jesse Bieberman, W3KT, RD1, Valley-hill Rd., Malvern, Pa., 19355.

W5, Hurley O. Saxon, K5QVH, P.O. Box 8915, El Paso, Texas, 79908.

W9, Ray P. Birren, W9MSG, P.O. Box 518, Elmhurst, Ill., 60126.

W4GYP forwards details of the Potomac Basin Award and also the Twin Counties Award. Details of both awards may be obtained from this Bureau.

Tom Lelliott, VK1AZW ex-VK3ZW, on a second world tour spent 14 days with his old friend Chuck, W9IHN, at Buring, Wisconsin, during October. Albert Zander VK3PG, on the tail end of his world tour, is currently enjoying a comprehensive bus tour of U.S.A. and Canada. While in N.Y.C. Bert called on Al, W2CC.

Tops member G3AOL, Sam Hall, presently in Australia, seized the opportunity to meet fellow members VK3CX, VK3KB and VK3RJ.

The following U.S.A. Hams together with their XYLs visited the eastern mainland states of Australia during October W1BIH John Thompson; W1TX Roy Fosberg and W3ADE John Doremus. Owing to a tight touring schedule time only permitted brief contacts with several F.O.C. members. W1BIH took out the call sign VK3BIH, and was anxious to give this call an airing from one or more VK stations.

—Ray Jones, VK3RJ, Manager.

— . . . —

NEW SOUTH WALES

The September monthly general meeting of the VK2 Division on Friday evening, the 23rd, had an attendance of about 60. The President, Tom O'Donnell VK2OD was back in the saddle again following his indisposition of the previous month, and after the usual preliminaries he extended a hearty welcome to Don VK2ZDZ and Mr. Frank Cook, of the Ionospheric Prediction Service.

The lecturer for the evening, Mr. Norman Burton, had as his subject "A Look at the History of Radio," and with the aid of slides he took his listeners back over 50 years to the first experiments of people like Marconi.

These days there probably would be no one around who would give a second thought to working DX with a crystal set, but in those early days there was very little choice in the equipment available, with spark gap transmitters and crystal detectors being the usual set-up for many years. Prior to World War I it was quite common for regular communications over distances up to 3000 miles or so, using the long-wave bands anywhere up to 30,000 metres or more.

Mobileers in the audience must have been taken aback when they saw a slide of the first attempt at this section of the art. It is hard to describe the kind of vehicle used, but we would like to see someone try it out on a modern day foxhunt. Mobile marine was not overlooked, either, with two men in a canoe, complete with the bulky equipment which included a large horn speaker like those used on the old Edison phonographs. As the lecturer remarked, the most marvellous thing about the whole business was that the canoe didn't sink.

Unfortunately, Mr. Burton had received a batch of slides too late for inclusion in that evening's talk, as a result of which he was forced to conclude his tracing of radio history in the middle 1930s. There were a few shots of modern ships' transmitters and the radio room as used by a well-known shipping line, and these served to illustrate just how far maritime communications had progressed in the past half-century.

In moving a vote of thanks to the lecturer, Bill Lewis VK2YB remarked that although Mr. Burton had displayed such a vast knowledge of the history of radio, he had no connection with it in his everyday life, being a chemist by profession. In addition to his interest in radio history, he had a considerable knowledge of receiving techniques, and had also become very proficient in reading c.w. so that he could follow transmissions from shipping. It is to be hoped that a further talk by Mr. Burton will be arranged for some time in the future.

In the absence of Syd Molan VK2SG (the QSL officer), Ted Whiting VK2ACD reported that cards handled for the month totalled 6830, including 3463 inwards and 3476 outwards.

Bert Hayes VK2AGW said that while overseas recently he had been questioned by British Amateurs about the Division's QSL Bureau. It appeared that these Amateurs had been warned over the air by certain VK2 operators that it was useless sending cards through the VK2 Bureau, which, they said, would not deliver cards to non-members of the Institute. Bert said he was raising the matter because he felt that the Institute's image would suffer overseas if these individuals continued to spread such stories.

Other speakers agreed and said that they had heard these statements being made on the DX bands.

It is very difficult for the average person to understand what goes on in the minds of people like this. Here we have an organisation set up purely for the benefit of the Amateur Radio movement, with unpaid volunteers giving up their time, for years on end in many instances, providing services for members—and, in the case of the QSL Bureau, for non-members as well.

The facts are, of course, that the VK2 QSL Bureau will handle cards for non-members on payment of a small fee and provided a stamped addressed envelope is left with the QSL officer.

What more could be expected by these individuals? Perhaps a special card-delivery service, free and without any effort on their part. We would remind them that in some overseas QSL Bureaux, cards not collected by non-members after a certain period are destroyed. In our book a non-member should not be entitled to any consideration. However, in view of the fact that they are catered for by our QSL Bureau, one would certainly be pardoned for expecting that this service be received graciously instead of wingeing and deliberately giving a false impression overseas.

No one would deny that faults have occurred in the past. Indeed, we would like to hear of any organisation—especially a voluntary one—where mistakes have never been made. What we are objecting to is untrue criticism by people who are not entitled to criticise at all.

If those concerned ever read these notes—let's hope they do—may we ask do they really think they would still be using the present frequency bands if it were not for the existence of such organisations as the W.I.A.?

Tom O'Donnell, the VK2 Divisional President, informed the meeting that he would take the matter in hand. He has asked us to state that if anyone—member or non-member—feels they have just cause for complaint about any section of the Institute's service, they should write either direct to Council or go along to a monthly general meeting and state their case. They should first, however, be very sure of their facts.

We regret to report two further Silent Keys from among our members—Ralph Miller VK2ARM and Gordon McLeod VK2ADC. One minute's silence was observed in their memory and that of Vic Holmes VK2AKP, whose passing was recorded last month. Ralph Miller had been a commercial operator before taking out an Amateur ticket some years ago, since when he had been active mainly on v.h.f. Gordon McLeod played an active part in flood emergency communication work during the 1950s. He was formerly a member of the Royal Australian Navy, and was a shipmate of the late Bob Winch VK2OA.

A visitor to these shores during September was Wayne Green W2NSD, publisher of "73" magazine, who at the moment is making a tour that will take him to many countries. Naturally, the main purpose of the tour is to gain first-hand information on the state of the Amateur Radio movement. Before taking his departure on the Tuesday morning, Wayne was met by the Divisional President, Tom VK2OD, and entertained by several well-known members, including Mac VK2ZH, Hebe VK2AOK and Pierce VK2APQ. The latter recorded an interview with the visitor and no doubt we will read all about it in a future issue of a certain publication.

The only general business before the meeting was in connection with memorials for deceased members who had given outstanding service to the Institute. This has been somewhat of a problem for a long time and the present Divisional Council sought expressions of opinion from members. Everyone appeared to agree that we should avoid cluttering up the meeting hall with plaques, etc., which would turn the place into what some speakers described as a mausoleum. One suggestion was a memorial book with names and other particulars inscribed, while another was for a plaque to the memory of all who had worked for the Institute—past, present and future—with no names mentioned at all. No finality was reached and Council will go into the matter further and arrive at a decision.

In the Youth Radio Scheme department, the Supervisor (Rex Black VK2YA) would like to hear from someone who is journalistically inclined and willing to write Y.R.S. doings for publication in "Amateur Radio." It is on the cards that Ken Mattei VK1KM will not be in a position to do so much longer, and it is most important that this section of our activities shall continue to be publicised. Rex reports an excellent result in the recent Elementary Certificate examination conducted by Mr Doug Williamson, Manual Arts Master at Miller High School, near Liverpool. All 51 candidates passed. Roger Davis VK1RD is to be heartily congratulated, for two of his Postal Group pupils, Eric Gauja (99%) and A. Kisson (98%) gained highest marks and the two O.T.C. prizes. In addition to these there were boys from Marist Bros. Maitland, Lyneham High School, Canberra Radio Society Youth Group, Marist Bros. Pagewood Griffith High School, Ryde High School, and Canterbury District Scouts' Radio Club. All candidates have received transistors from A.W.V. and resistors and capacitors from S.T.C.

Our northern members are reminded of the combined VK4/VK2 Family Picnic ("Famfest" is the term for it), to take place at Kingcliff on November 20. We hope all those within range of this event will make it a "must," so that it will be an even greater success than it was last year.

We heard during the month that Ron VK2ALR and Ern VK2EH and their good ladies were enjoying a Pacific cruise. This should be just what the doctor ordered and we hope they had a good time.

Last month's notes mentioned that a theatre party had been arranged for September 8 to see the film "My Fair Lady." In spite of some rain on the night, 102 people saw the film and of these, 71 stayed for supper afterwards. Harry VK2AEC and his family, from Grong Grong, took out the honours for the longest distance travelled to see the show. Everyone appeared to enjoy the evening and at the first opportunity we will organise another party.

We would like to remind all those who would like to take out an Amateur ticket, and perhaps are having trouble with their theory, that the N.S.W. Division conducts personal classes at Wireless Institute Centre, 14 Atchison St., Crows Nest. Morse code instruction is also given for those after their full licence. A new set of classes will commence next February, and if you drop a line to the Instructor, Mr Cec Bardwell, at the Centre, he would be pleased to advise you.

In view of the recent move to use the word "hertz" in place of our old friend "cycles per second," an item in August issue of "QST" magazine makes rather interesting reading. According to this publication, opinion on the wisdom and need for the change is not by any means unanimous. While some U.S. magazines, instrument manufacturers and scientific societies have changed to "hertz," on the other hand some government agencies feel an obligation to adhere to the requirements in the I.T.U. Regulations, which state that frequencies shall be expressed in kilocycles per second and megacycles per second. The same article includes a rather humorous letter taken from the "R.S.G.B. Bulletin" of

SILENT KEY

It is with deep regret that we record the passing of:

VK2ADC—Gordon McLeod.
VK2ARM—Ralph Miller.
VK3ZB—Reg. Hollis-Bee (ex-VS2AG, VS1AG, VK3DL).
VK3AVE—Arthur Dixon.

April last, the writer of which gives many reasons why he thinks there should not be a change. So far as we are personally concerned, after hearing some broadcast operators manfully trying out the new term we have come to the conclusion that, on phone, it sounds like an audible digestive upheaval brought about by an unfortunate culinary experiment!

Those who are in a position to attend our monthly general meetings are reminded that the next one will be held at Wireless Institute Centre on Friday evening, November 25. A lecture on "Solid State Sideband" will be given by Mr. Ted Banstead, an A.W.A. engineer. 73, Ivan VK2AIM.

HUNTER BRANCH

A most successful Convention was held during the October long week-end. The activities commenced on Friday night and continued until Sunday, 2nd October. At the monthly meeting members were invited to display and describe some item of home-built equipment and thus compete for a valuable prize; the Radiotron Designer's Handbook. The effort considered most praiseworthy by the judges and the votes of the audience was the 2 and 6 metre transmitter and modulator described by Bill VK2ZWM. However, because of the high standard of constructional work, magazine subscriptions to "Radiotronics" were awarded to the others taking part in the contest, Tony 2ZCT, Ian 2ZIF and Gordon 2ZSG. The only disturbing point is that only four members could present equipment for judging when perhaps all of us have built some equipment worthy of display since the last convention.

At the Annual Dinner there were fewer guests than usual but the convivial atmosphere at the hall was a fitting reward for those who attended and supported the branch. Among the guests were Cyril 2CH, who represented the N.S.W Division, and Ray VK2HC. The welcome to the visitors was given by Bill 2XT and Ray 2HC proposed the toast to the Institute. The response was given by Cyril 2CH who commended the Branch on the standing it holds with the Divisional Council.

An interesting address, outlining the progress of Amateur Radio in the Newcastle area was given by Lionel 2CS, who spoke at length about activities of both past and present members. The dinner was a social and financial success and the choice of venue proved to be a wise one. In addition to a tastefully prepared programme and menu a large bundle of informative literature was presented to each of the diners.

On Sunday, 2nd October, the Field Day was held at the Bolton Point park. Attendance early was disappointing but by early lunchtime a representative crowd had gathered and entrants for the events numbered more than six in each case. Once again Dave 2AWZ proved to be an outstanding competitor with a win in the second two metre hunt and an unbelievable score of 21 contacts in the half hour afternoon scramble. The 40 metre transmitter was unfound although it produced a very loud signal throughout the hunt. Winner of the afternoon 2 metre hunt was Greg Partridge, the 2nd op. of 2VU. In addition to the mobile events there were two pedestrian transmitter hunts on 2 metres. These resulted in wins for David Fraser and Michael Korsch. David is a member of the Westlakes Radio Club while Michael is a Gosford member. Since the regulations regarding raffles have been relaxed, a raffle was conducted with a "Radiotron Designer's Handbook" as a prize. Much to his own and the audience's delight, the book was won by Otto 2SI and this and other prizes were presented at a short ceremony on the ground. At this time it announced that all proceeds would go to the I.T.U. Fund as a Hunter Branch contribution. So seriously does the branch consider the situation of international pressure on our exclusive allocations that a census of members was taken and all asked agreed on the direction of all funds towards the cost of representation at the all-important conference. It is believed that a sum of about $40 will be added as a result of the field day profits. Another field day has been planned for Sunday, 4th December, and once again all profits will go to the I.T.U. fund.

Harry 2AFA has increased his activity since being visited by Paul Linsley, a very keen short wave listener. Apparently Paul paid Harry several visits and by some means or other was able to convince him to get back on the air. The added activity on the bands caused by irregular operation becoming regular can only help the cause of the hobby. There are some who would have us out of the r.f. spectrum altogether if a case could be brought for our exclusion. So help preserve the hobby by operating as frequently as possible on as many bands as you are able. Jan 2BJO has become the proud owner of a high power rig originally owned by Jack 2KQ. Jack now operates sideband exclusively and passed on the excellent rack-mounted gear to Jan. Watch out for some high power shortly—thanks to Jack; Paddy 2AXU was heard on the air recently after a long absence caused by a failure of some power supplies. And Jim 2AHT is widening his field by adding some local contacts. It is good to hear Jim on the air with the local boys and he certainly has a fine signal on s.s.b. Sherwood 2AJF, Len 2ZFD and Cyril 2CH recently hit the headlines with a picture in the "Herald" and as a result Sherwood has made a vow to be on the air by the time this appears in print. We'll see! Susan 2BSB and Charles 2ZLH are the latest to acquire carphones for 146 f.m., so there soon should be additional QRM on this frequency. And, perhaps best of all, "Bones" Bedford is applying for his licence while Bruce Morley is preparing for the big quiz. Good luck men—the sooner you are on the air, the better. And, as they say on the films, that just about wraps it up for now. Don't forget the November meeting on Friday, 4th, at the usual venue. Ian Pogson, of "Electronics," will be there and rumour has it that he will be talking s.s.b. Don't miss it. See you. 73, 2AKX.

CENTRAL COAST BRANCH

The last meeting of the Central Coast Branch was held on September 16. Lionel Doolan VK2ZLD, well known as an instructor at Gore Hill Technical College, gave a most interesting lecture on Printed Circuits which seemed to emphasise how apt the term "wireless" really is. He also presented an American film in colour and sound on making Printed Circuits. One of the comments heard repeatedly was about the difference between the American and Australian pronunciation of the word "solder." The American version comes out as "sodder."

The annual Field Day will be held at Gosford around the middle of February with all the usual attractions plus something new. Keep an eye open for the exact date which will be published in a few weeks.

The Branch Christmas Party will be held on December 7 at the new Bistro Restaurant in William Court, Gosford. A delicious smorgasbord dinner is planned, to be preceded by "punch," conversation, etc. 73, Mona VK2AXS.

SUMMERLAND AMATEUR RADIO CLUB

The bi-monthly meeting of the club was held at Lennox Head on 25th September. Members present were Gordon 2AQE, Graham 2GJ, Ted 2ZFS, Horrie 2ZES, John 2ZLO, John 2KA, Fred 2PF, Jack 2BGG, Lindsay 2ACO, Kevin 2ZSW, Ken 2ZKH. The main item of business

VK2 DIVISION

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6100, 6142-5, 6165, 6235, 6275, 6315, 6362-5, 6405, 6450 Kc. $1 each or 5 for $4.00. They are in FT243 holders.

This completes the list from 3680 to 6450 Kcs. There are a few others in HC6U holders in ranges of 8, 9, 13, 14 and 25 Mcs. Details later.

Radio Equipment Store, 14 Atchison St., Crows Nest, N.S.W.

LECTURE TAPES

16. "Tally Ho." 7 Mcs. Fox Hunting, 1 hr. with slides, H. Burtoft, VK2AAH.

17. Cause and Chance Creation, 40 min. No slides. Prof. Monison.

18. Grid Dip Oscillators, 80 min. 15 slides, Bob Winch, VK2OA.

19. Balun Transformers, 2 hrs. 33 slides. Joe Reed, VK2JR.

20. "How does my Signal go?" 70 min. 19 slides. Frank Hine, VK2QL.

Details in August "A.R."

was a notice of motion given by our president, 2ACO, to change the name of the club from the Far Northern District Radio Club to the "Summerland Amateur Radio Club." This was dealt with and the result was that we are now known as the "Summerland Amateur Radio Club."

Some apologies were received from members, namely Blue 2AEU, Harold 2AWH and Bob 2AAS.

A good day was had by all present and the next meeting, the annual meeting, it was decided to hold at the QTH of Lindsay 2ACO, our President, on the 25th November. Members please note this date and all roll up.

Band activity has not been very good, especially on the 3.6 Mc. net every Thursday night at 8 o'clock, so what about it chaps, blow the dust out of the rig, put some sigs. on the air.

Once again I am plugging for the Kingscliff get-together on 20th November, so please make a special effort and attend, you will be assured of a good time.

The notes this month consist of mostly pleas and dates, promise I will do better next month. 73, George 2AEO.

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VICTORIA

I.T.U. ACKNOWLEDGMENTS

Further donations received are as follows:—

$3.00: F. Dettman, 3APJ.

$5.00: L. L. McInnes, 3AMK; R. K. Smyth, 3AKS; A. K. Finlden, 3AKD; S. McIndoe, 3ATD.

$4.00: G. S. Vincent, 3AGV; G. Luckman, 3ADL; J. A. Moran, 3ABQ.

$3.00: J. A. Ferguson, 3AXL; D. Voight, 3ABC; E. Blake, 3ZHA; L. Poynter, 3ZGP; R. Chalmers, 3ARO; R. Torrington, 3TJ; M. G. Foster, 3ZOL.

$1.00: M. Lodge, 3JM; I. Smith, Assoc.; M. Dalton, 3DF; K. Duff, 3CV; E. C. Phillips, 3AEP; A. Lord, 3BE.

EASTERN ZONE

Shortly 2RC will be moving to Stratford, and from all reports he is a keen v.h.f. fan and will be heard most likely on Channel A 2 f.m. Barry 3ZQC at Mirboo North, has moved in from Western Victoria and works at Ch. 8, is another 2 f.m. fan. Arch 3ZAT also works at Ch. 4 and has 2 f.m. and is attempting to get his Pye going on 53.032 Mc., the Tx is okay but the Rx won't receive. Joe 3TO is another recent arrival on 2 f.m., after many years off the bands, and Dave 3ZOZ has also come up on f.m. as well as a.m. Les 3ZSS, of Moe, is a new member of the Amateur fraternity and is active on 2 a.m. What about giving him a call you 2 metre fellas.

Albert Cash and George 3ZCG are working on some super-regen. equipment for 432 Mcs. Albert hopes to go for his ticket in October, so all the best Albert. Sorry to report that there is no h.f. news, as I haven't had the time to listen to the 20000 hrs. hook-up on 80 of a Friday, because I'm down in the city all week and only have the week-end free.

I have been transferred from 3GI to the Antarctic Division and am doing familiarisation courses before sailing to Macquarie Island in early December. I hope to take gear for most bands, 80, 40, 20 and 6 metres in particular, and s.s.b. at that if possible. Don't forget if you hear Macquarie don't forget to give a yell. Is there a volunteer to carry on this task of keeping the Eastern Zone on the map as far as notes go? I will endeavour to glean notes until the end of the year if anyone can send me some in rough form. George 3ZCG has supplied me with a goodly proportion of the v.h.f. news for which I am most grateful. 3UG.

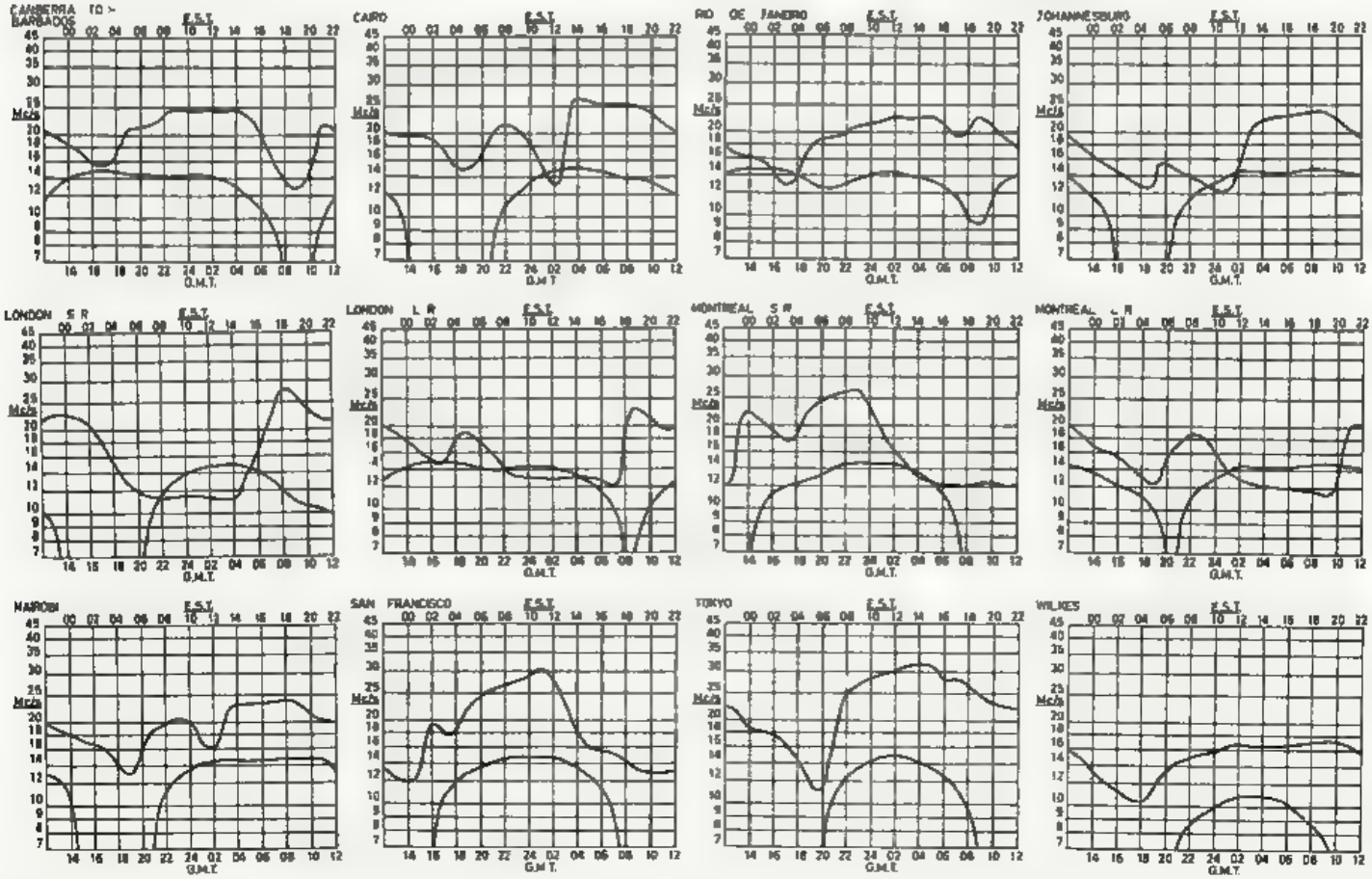
— . . . —

SOUTH AUSTRALIA

The monthly general meeting of the VKS Division for September was held in the clubrooms to an attendance of members and visitors well over the 70 in number, despite the inclement weather. Very little business, either Divisional or Federal, was discussed, although the Federal Councillor, Geoff. 5TY read out a letter sent to the VK2 Division protesting on their action over the new Federal Constitution, and judging by the comments which followed the reading, the members present thoroughly approved of its contents. Details were also given of the coming large-scale W.I.C.E.N. exercise which will be held over the long week-end of October, and will be the largest to date, with 24 stations participating in a v.h.f. net covering the area from Port Pirie to Murray Bridge. George 5RX then took over with the distribution of QSL cards, and after a short smoke-oh the meeting was handed over to Messrs. Judd and Farrell, from Tektronix Australia Pty. Ltd., whose subject was naturally oscilloscopes, and what oscilloscopes they were, making the old faithful 5BPI seem like the lace-up boot era. The first unit demonstrated was flat from d.c. to 50 megs, and locked on to complex waveforms like the caretaker's Alsatian elephant would like to lock on to the seat of my pants at the end of the meeting. Its unique features were demonstrated to an entranced audience, the double time base which allowed any selected portion of the trace to be brightened up for closer examination, fairly laying the audience in the aisles. Having showed the first unit's capabilities, Mr. Farrell then switched on the second unit which displayed some 5 cycles of a sine wave on the screen, casually mentioning that the frequency of the signal was 100 megs. This unit was capable of handling inputs of up to 670 megs. with a sensitivity of 2mv/cm, and with his audience still gasping for breath he then showed how a desired waveform could be stored on the screen for up to one hour on a half screen, whilst another pattern was being stored or displayed on the other half.

Having by now almost stunned the audience with his dexterity at the controls, the lecture was concluded by a film on the production of cathode ray tubes. The vote of

PREDICTION CHARTS FOR NOVEMBER 1966



(Prediction Charts by courtesy of Ionospheric Prediction Service)

thanks was ably proposed by John 5KX, being carried with more than the usual enthusiasm by the members, most of whom had to be forcibly removed from the rooms at the end of the meeting by a new caretaker, minus any Alsatian. I can't give any finishing time, mainly because the time for the night flew so fast, but this I will say, anybody who missed this meeting, missed a beauty, and the programme organiser Ron 5KS deserves a special pat on the back for serving up such a dish.

Never see Leith 5LG at the meetings these days, in fact, it is so long since I have seen him that all I seem to remember of him is his machine efficiency and inborn ability for precise working. Now I know a certain VK5 who carefully filled out his R.D. Contest log-sheet, neatly addressed it to Perth, then very carefully put the envelope inside a parcel he was sending to Queensland and posted it away unconsciously. Now there is efficiency—Leith would never do a thing like that—or would he?——!!

This has been the season for colds, virus infections and what have you. Jack 5LN, heard on 7 Mc. the other evening had a cold, etc., etc., which would have licked any other form of winter infection hollow. When heard, he said that he was feeling a lot better than he had been feeling, and all I can say to that understatement of the year is that I would not have liked to have heard him when he was feeling any worse!

Athol 5LQ, the other half of the perpetual sked with Jack 5LN, however, was feeling in the pink when heard, in fact, I rather thought that I detected an air of complete resistance to colds, etc., etc., in his remarks. His later remark that he had been on the air the other Sunday for so long that the family had begun to think that he had left home, made me wonder just what their reactions would have been if this had been true. You tell me Athol!

Frank 5FJ heard commenting on the fact that he had been on 0 mx doing a little reading of the mail, as well as a few contacts. His comment that on 6 mx most of the gang appeared to talk for hours and hours was a little surprising. Why only on 0 mx Frank?

Was listening to Keith 5ZY the other Sunday on 7 Mc. Have not heard or seen him for some time, but from comments heard at various times from local stations I know he was still on the job. We used to meet fairly regularly in the members' stand at the football once upon a time, but as the fences are getting higher, or perhaps the effort is too much for me these days, football is out!

Rex 5DO was another one to be heard the other Sunday on 7 Mc., the first time in fact I have heard him since his trip on sea, land and air to G land. I listened carefully to see if I could detect any trace of an Oxford accent, but nothing doing, still the same old Rex, thank you.

Twelve months ago to the day that Frank 5MZ was first taken ill, I happened to be in the vicinity of his QTH and decided to call in and find out at first hand just how he was getting on. His XYL answered the door and was tickled pink to tell me that he had now gone back to work, and was fighting fit, well, fighting anyway. Good news, Frank, if ever there was a battler, it's you.

Wayne Green W2NSD, editor of the well-known magazine "73," touched down at Adelaide Airport one evening this month, en route from Perth to Melbourne, and thence homewards to the U.S.A. The jet did not stop long in VK5, about three-quarters of an hour to be precise, but I took the opportunity on behalf of VK5 to extend greetings to him, and also to have a chat on current radio topics. I have always been intrigued with Wayne, the publicity both for and against never quite rang a bell with me, and whilst I would be the first to admit that it is difficult to form a solid opinion in such a short time, I cannot but say that he impressed me immensely with his knowledge of the radio world and also his intense enthusiasm for Amateur Radio, and after all, that is all that matters to me. I consider our brief meeting both an honour and a privilege.

Apparently as I write, Phil 5NN is jaunting around in VK6, judging by the telegram I received from him concerning the fact of Wayne W2NSD passing through VK5. What it is to belong to the idle rich!

It is either a feast or a famine. I heard a whisper that W2NSD would be passing through, but there my information ended. However, on the day of his arrival, first came Phil's telegram, closely followed by a letter from David 3QV with the arrival date, and last but by no means least, somebody rang from the airport to pass on the times of arrival, etc., and to top it off I received my copy of "73" with full details of the trip, together with full arrival times and flight number. I thangyou—I thangyou.

I notice 3UG calling my attention to his having the ideal anti-s.s.b. receiver. Just why he should consider that anything anti-s.s.b. would be of any interest to me I cannot for the life of me understand—ahem—however, I thank him for his interest in my welfare, and hasten to assure him that I feel for him due to the fact that he is somewhat dependent upon s.s.b. for news in his column. When that day comes for me brother, it will have to be ring down the curtain I can't write tonight!

Also notice that Bob 4RW comments on the horrid winter weather in VK3 at present, and asks me to note! Cut it out, Bob, don't you think I am in enough strife with VK3 at the moment, without you putting my weights up with YE ED.!

Anybody outside VK3 who read the August copy of the VK3 Journal could be forgiven for thinking that old age is the present theme of the VK3 Division. Firstly Harry 3MY wrote a paragraph or so on the subject of "It is later than you think," which after reading I immediately rang my insurance office and checked up to see if my policy was well and truly paid up, then Murray 3ZQ launched out on the back page with an ode entitled "A prayer for those growing older," definitely written with his tongue in his cheek and both eyes on me!! and to finally sink the ship, Geoff 3TY in his Federal Comment insinuated that, and I quote: "Although Warwick 3PS gets abused for asking awkward questions, at least he makes the other members think, keeps Council on their toes, and will probably get his lughole (whatever that coarse remark may mean) thumped one night" unquote. Flattery, flattery, that is all I seem to get lately. Some are borne to fame, some achieve fame, etc., etc. Just think of it—I keep Council on their toes—Oh yeah—I would hate to tell you where they all hope to put their toes one day, if ever they catch me unawares!!

It is fast approaching renewal of subscription time for QST-CQ-73. It would be very good if it was possible to renew these subs. through the W.I.A., instead of only QST. I receive the three magazines above-mentioned, no I am not a plutocrat, my XYL and daughter do the right thing for my birthday and Christmas, but it is hardly likely that I would renew QST through the W.I.A. and then go to the trouble to renew CQ and 73 elsewhere. What about it, my buddies from VK3? Surely it can be done, or am I behind the times with my information. (You're behind the times.—Ed.)

This month has been a very dangerous month for VK5—My XYL answered the front doorbell about 9 p.m. the other night, to be confronted by three rather seedy looking customers, one carrying a black box, who proudly claimed to be VK3's and asking for Pansy. My XYL, who has rehearsed the panic procedure for such an occasion many, many times, immediately pressed the red button situated strategically just behind the door, marked "action stations," and then went into her act like a veteran. In a voice intended to inspire fear, she said, "Mr. Parsons is at the moment having his nightly training session with his pet lions and tigers, after which he will practice for an hour or so at Judo and Karate, but if you care to come in and wait, I am sure he will be pleased to see you." Apparently VK3s don't frighten easily, because Fred 3YS—David 3QV and a young man of very presentable appearance in Greg., moved in as a body, black box and all, and took their seats in the portion of the tent marked "sitting room." Joking aside, they turned out to be good fellows, and after a short chat, they took over the shack, closely checking the receiver for labels like "upper and lower"—"product detector"—etc., etc., and then went into a demonstration of the black box which turned out to be none other than a FT 100, which snared a VK6-VK4—and a VK5—in a few seconds on 7 Mc. Much more could be said on this subject, but in deference to my army of a.m. followers I will refrain, only saying that the demo. was too convincing for comfort, and my XYL told me later that all she could see of me during the later inspection of the innards of the FT 100 was a pair of slippers sticking out of the little black box! Anyway, somewhere in the wee small hours the visitors departed, well pleased with the unsettling effect their demonstration of "The Thing" had been to me, and the XYL summed up the position later when she said "I think you have been leading me up the garden path about VK3, and also about that duck business!" "I quite enjoyed their visit, and I certainly never heard any duck-talk!!" How cunning can a VK3 be? By the way, both ends of my centre-fed Zepp were decidedly drooping upon inspection next morning, probably from shame and disgrace! and this only goes to show just what "The Thing" will do to a good and faithful centre-fed Zepp—shame upon me—.

Bob 5RI still has his radio-controlled gates on his estate. It appears that the radiator grille on his vehicle, suitably insulated, makes an extra good radiator at the required frequency. I was boasting to a non-Amateur friend of the ingenuity of the average Amateur, but he turned out a bit of a nark, he asked me what if the vehicle backed up to the gate. Wouldn't it?

Uncle Tom 5TL, at the age of 62 years, has gone back to school two nights a week, and the radio school at that. I suppose I could say "carting coals to Newcastle," but he tells me that he realises that there is a lot he does not know, and this is a good way to find out. I salute you O.M.

The paragraph in the August issue of the magazine regarding Cyril Malpas, and the tag-line asking Roy 5AC if he remembered his call sign, if any, succeeded in smoking Roy out into the open, so much so that he sent me a welcome letter containing a lot of details of the early days in VK5, most of which will come in very handy as copy for the future. Many thanks, O.M., good to hear from you again.

Vern 5VB, the Admiral to you, has recently changed his vocation, his main reason being that he thought at his age it was getting too hard. He is enjoying the change, and I noticed that his famous Quad was written up in the equivalent of our VK5 Journal which is printed in VK6. What it is to be famous!

Les 5NJ has fitted another 10 watt a.m. rig in his car, and has now become neither fish nor fowl, using as he does both modes of communication, to wit, s.s.b. and a.m. Apparently my preaching on "The Thing" has reached the heart of at least one sinner!

Being of such a modest and retiring nature, it is only natural that few in VK5 realise that among my many accomplishments is that of inventing. Reading at breakfast recently of a new gadget in Japan which switches circuits on and off by a couple of hand-claps, I leaned forward on the table and said to my better nine-tenths "we were born too early in the century." On her querying this profound remark, I told her of my flair for inventing—a fact of which she was apparently unaware, judging by her caustic comment on the tap in the bathroom that has been dripping for weeks—and proceeded to tell her that I wished that the above-mentioned hand-clapping gadget had been around when we were courting. "Just think of it," I said, "you and I sitting on the couch in the drawing room, me giving a couple of brisk claps of the hand, and out would go the light." Yum-Yum. Giving me that look that has now become so familiar over the past forty years or so, my XYL simply said, "I would have had an invention to lick that one." "Just two brisk slaps on the face and the lights would have come on again immediately!!" I don't know, nobody seems to appreciate my inventive ability!! 73 de 5PS—PanSy to you.

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WESTERN AUSTRALIA

Well, another moon has passed with alarming alacrity and already Christmas cards are on sale and by the time you read this screed the old gentleman with the white whiskers will only be seven or eight weeks away.

My prize this month for the most surprised gent. in VK6 Division goes without doubt to Jim 6RU. The reason for his surprise (a pleasant one) was the unexpectedly large number of interested members who turned up to learn Morse after Jim had offered his services as instructor. A very gratifying result and it certainly shows that c.w. still has some attraction. Hope the numbers are just as large or larger at the end of the course.

As the worthy steeds drew my chariot around Dog Swamp t'other day my fleeting glance perceived some additional hardware up on the hill at the QTH of Dennis 6AW. At first glance I took it to be a "Halo" and observed as much to those members of my family who accompany me on such occasions. Usually my remarks regarding antennae and towers, etc., meet with stony silence or hissing rebuke. However, I was somewhat stunned when one of the team quipped, "Yeah, it probably belongs to his guardian angel." What say, Dennis? It's really a "Big Wheel" or some such I suppose.

Once again we have news of an intrepid traveller venturing on to this side of the rabbit-proof fence. Welcome to George VK5CV and XYL who have been soaking up the sunshine in the Wild Flower State. WOT SUNSHINE?? Understand that George was present at a small gathering of local Hams while staying in Perth. Among those present were Dave 6WT, Bill 6WY, Glad 6FG. Hope your tour was successful, O.M.

It must be about this time every year when wives assert themselves and demand a forty-hour week and three weeks' annual leave,

etc., etc. That is judging by the number of Merry Mobileers and Holidaying Hams that have come under my "Eagle Eye." Woops, no advertising—please.

Worked Pat 6PH portable at Geraldton and Noel 6MF portable at Bunbury recently and heard that Cole 6CS was operating from the mouth of the Murchison (where, incidentally, he was joined by George VK5CV). Called John 6ZW who was operating portable at Kalgoorlie, the other Sunday morning but he disdained to reply—probably too busy prospecting I suppose. Thought the Kalgoorlie area had been unusually quiet for some time but at last the secret has filtered through, Doug 6EP has been away, holidaying in VK5 land, I'm told. Hope you had a good trip Doug.

Another of my cloak and dagger boys staggered in to report that George 6GM has been holidaying with Basil 6BS and may at a later date venture further south.

I must admit that during my long service leave I, too, ventured south for a very brief visit and could not pass through Waroona without visiting Bob 6RG. It is my happy duty to report that Bob is sporting a new receiver these days and appears very happy with his new purchase. Together with the fact that Bob has recently given his beam a facelift (or whatever it is that one gives beams) with some able assistance from Tom 6TH, we can expect big things from this neck of the woods.

Sufficient time has elapsed and NOW IT CAN BE TOLD. You know how versatile most Hams are? Well, Vic 6VK is no exception, and my spies tell me that he has, unknown to most, been experimenting with flying saucers. His greatest success came recently when a prototype, guided by remote control, lifted off its launching pad after several minor delays. Amid hand-claps and cheers of encouragement from the neighbours it successfully negotiated the dividing fence and settled gracefully to earth on top of a high-standing clothes hoist, which it conveniently flattened. Served it right for looking so much like an X beam. (The hoist that is—not the flying saucer.) Seriously though, I understand that the garage roof has been repaired and securely fastened down where it can never again threaten man or beast, or clothes hoists!

News to hand from one of my friends in VK5 (yes, thank you, I do still have some friends) who had just had a contact with Bob 6KN. Bob was operating 40 metres mobile in the fair city of Melbourne. His many friends in the west will be pleased to know that he is still alive and kicking.

At the time of tapping out these notes Don 6HK is in hospital with a fractured hip. I understand that he was unfortunate enough to slip on a wet road and came down rather hard. We wish you a speedy recovery Don—just think of all the hours you can idle away in front of your rig while you are convalescing.

Football fever is raging at its peak just now and one-eyed supporters are quite commonplace. Black eyes, too, are not entirely out of the question. I wonder. The cause of my head-scratching is Herb 6XO who, according to my informant, is doing a Dr. Cyclops. Herb insists that he walked into a bramble bush—sorry, an Oleander, which did him deadly damage. Any witnesses, Herb?

Imagine my surprise recently when a very strong sideband signal crashed its way into my shack. The voice sounded familiar, but not in the sideband mode, yet sure enough it was Jack 6TX all right. Knocking off the DX in fine style, too. Looks as though I'll just have to get my linear working.

It is with deep regret that we record the passing of the XYL of Clarrie 6CP. Sincere sympathy is extended to you and yours at this time, O.M.

Well fans, that just about winds up my "walk-about-talk-about" for this month, so cheers and good DX till next time.

73, Ross VK6DA.

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TASMANIA

September was a great month, something happened at our general meeting that is a rather rare occurrence, namely, the unanimous election of Terry 7CT to the status of life membership. A brief summary of Terry's outstanding service is: Councillor 9 years, Vice-President 3 years, Publicity Officer for 1 year, a member of the Distribution Committee 2 years, Broadcast Officer 5 years, A.O.C.P. class instructor both at Technical College and the clubrooms for 8 years, and at present is a Councillor, Vice-President, Treasurer, A.O.C.P. instructor, and an active Amateur, besides being a very busy businessman, with a home and family to look after.

In response Terry told the meeting that he had only done what was his reflection on life, "If you are involved in something, then become really involved and contribute something." In other words the old adage reads once again, "As you sow so shall ye reap."

One thing that is coming up and won't be over till the end of the month is our Annual Hamfest at Campbelltown on the last week-end of this month, that is the 26th and 27th in case you haven't a calendar. I understand most people will be catered for in the way of foxhunts and such capers, also that quite a number are going up for the whole week-end, and that includes Friday night. So bring the family and pitch your tent and "go bush" for the two days and relax.

A "May-day" was sent out one recent Sunday morning, when your disposal committee found they had too much stuff to move in too short a time, Reg. 7ZAO came to light with his car and trailer and Barry 7ZBR met the others at the clubrooms, shortly after saw John 7ZJG, Tim 7ZTM, Phil 7ZPT and associate Brian roll up, and the number of trips up those two long flights of stairs was considerably reduced, and sorting and stacking became almost a pleasure, real production line technique, thanks chaps for your response.

I am assured by the little bird who hears all, and occasionally passes on little bits of news to yours truly, that a certain Launcestonian gentleman (even though he's a sideBander) isn't giving the game away at all, so just to write finis to the rumours, I'll tell you it's just the opposite, in fact, he's on for getting a "five band duck talker," admittedly he's having a short spell, but let's face it, he's been bitten by the bug for long enough not to give up completely, on the contrary, he'll be bigger, brighter and better (?) than ever.

See you at the Hamfest. 73's, Geoff 7ZAS.

HAMADS

Minimum 50c, for thirty words. Extra words, 2c each.

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BOOKS: Contents of Library of the late Allen Stow, VK3AS. Beautifully bound copies of "QST," 1927 to 1944 incl. and 1953 to 1963 incl., plus unbound copies 1945 to 1952, $50, O.N.O. the lot. Plus many reference books mainly of radio historical nature. Contact Leo Fowler, VK3ZGF, 16 Bourne Road, Glen Iris, Victoria.

DRAKE 2B Receiver, excellent condition. Includes 230/110v. transformer, speaker, extra 10 metre xtal and instruction manual. J. Bail, VK3ABA, 20 Belowe Cres., Box Hill North, Vic. Phone 89-8505.

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FOR SALE: NCX3 Triband Transceiver with NCXA, 110v. a.c. Power Supply/Speaker, also spare VOX relay, one owner, used 100 hours. Perfect condition. Enquire J.B.C., Box 2098S, Melbourne.

FOR SALE: Tech. Valve Tester, $18. Davenset 6 volt ½ amp. Charger, $5. 6 volt to 135 volt 25 mA. Vibrator, P.S., $2. 20 ft. collapsible self-supporting Mast, $15. 32 volt to 240 volt a.c. Inverter, 100w., $4. No. 19 Genemotor, $4. AT5 ATU, $5. AT5 Transmitter, $10. 8 watt 160 metre xtal locked a.m. Transmitter, $34. Classic TR2 Tape Recorder, 3 speed, $70. Banda Spirit Duplicator, $40. Lafayette HE-30 Receiver, $70, and the following Heathkit equipment, Cheyenne MT-1 Transmitter, a.m./c.w., modified for plate modulation, 90 watts, $90. Comanche MR-1 Receiver, 80 to 10 metres, 3 Kc. bandwidth companion to MT-1, $100. 0-12-U 5 in. Oscilloscope, $100, and 455 Kc. Q-Multiplier, $14. Items 3, 5, 7 in fair order, all other units in good working condition, AT5 never used by me, no handbook available either, but all other major units supplied with circuits and handbooks. Rodney Champness, 14 Buckley St., Sale, Vic., VK3UG.

HEATH HW20, 144 Mc., 20 watt Transceiver, 144-148 Mcs. v.f.o. plus 4 crystal positions. Suitable 110v. a.c. or 12v. d.c. for fixed or mobile operation. Complete with microphone, 10 element beam, mobiel whip and all mounting accessories. As new £95. VK3TD. Phone Melbourne 787-1407.

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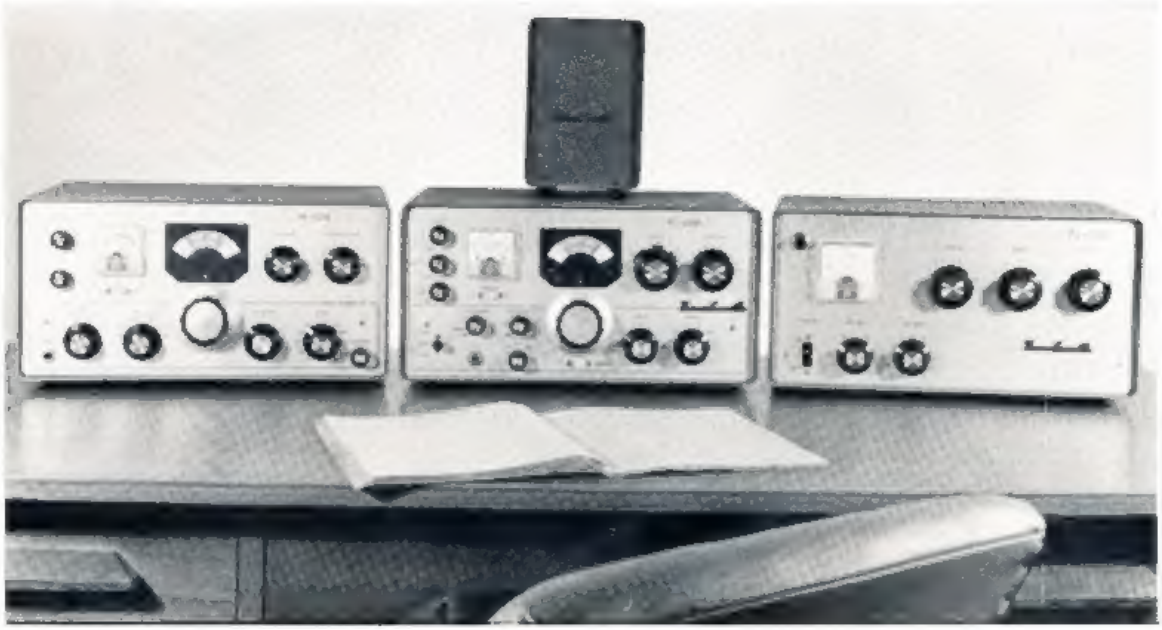
KEW V.T.V.M. K-142, worth $60, sell $39.50. Also 18 AVQ vert Ant., $35. Phone 772-3880, 13 Graham Rd., Carrum, Vic.

SELL: A.W.A. Carphone (Senior), complete with power supply, leads and crystals, for 52 Mcs., f.m. net, 24 watts to 2E25. Perfect condition, $45, O.N.O. VK3ZTC, Norm Richardson, 29 Aberdeen Rd., South Blackburn, Vic. (88-3285).

WANTED: Galaxy 5 or similar, with commercial P.S. Full details to P.O. Box 35, Narre Warren, Victoria.

WANTED: Radio Control Tx and Rx. Also books and gear for model boat. Sell or swap record player and tape recorder. Full details, price, etc., G. O. Kuch, "Ramahyuck," Stratford, Vic.



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FROM THE FINE RANGE OF YAESU F-SERIES EQUIPMENT

FIVE BANDS 80-10 METRES MECHANICAL FILTER

S.S.B. with V.O.X. & P.T.T., C.W. break-in, and A.M. Transceive or separate operation.

FL-200B Transmitter (centre) provides all these facilities—no extras required.

FR-100B Receiver (at left) has features you expect for modern S.S.B., C.W. and A.M. reception.

FL-1000 Linear (at right) provides safe and EFFECTIVE output power. Equally suitable on other transmitters and transceivers.

SPECIFICATIONS:

FR-100B: RECEIVER. S.S.B.-A.M.-C.W. dual conversion with crystal locked front end; sensitivity, less than 0.5 micro-volts for 10 db S/N ratio. Two mechanical filters, 2.1 kc. for S.S.B. and 4 kc. for A.M. Crystal filter for C.W. High reduction precision gear driven dial with read out of 1 kc. A.N.L., "S" meter, A.G.C., offset tuning, crystal controlled B.F.O. with selectable sidebands, built-in monitor, ring demodulator. Frequency ranges: 3.5-4.1 Mc., 6.9-7.5 Mc., 13.9-14.5 Mc., 20.9-21.5 Mc., 27.9-28.5 Mc., 28.5-29.1 Mc. Additional crystals available for 100 kc. calibrator, WWV, 28.9-29.5 Mc. and three other s.w. ranges between 7.5 and 30 Mc. Adaptor kit available for F.M. Solid state voltage regulated power supply 230v. a.c., 50w. £199/10/- ($399).

FL-200B: TRANSMITTER. S.S.B.-A.M.-C.W., two 6JS6A (similar 6DQ5) tubes in p.a., 240w. p.e.p. input. Includes inbuilt VOX, ALC, USB-LSB selection, extremely stable VFO, Kokusai M.F. Carrier and sideband suppression better than —50 db. Accessory socket provides connections for receiver muting and linear control. Built-in solid state 230v. a.c. power supply, antenna relay, etc., Frequency ranges: 3.5-4.1 Mc., 6.9-7.5 Mc., 13.9-14.5 Mc., 20.9-21.5 Mc., 27.9-28.5 Mc., 28.5-29.1 Mc. All plugs, inst. manual and p.b. microphone supplied. Nothing else to buy. On C.W., break-in operation is possible, T9X note, clean, chirpless keying. VFO runs continuously, £219/10/- ($429).

FL-1000: LINEAR AMP., four 6JS6As in g.g., 80-10m. Will match any S.S.B. exciter capable of output power of 30 to 100 watts p.e.p. Power switch controls built-in relay for barefoot or amplifier operation without any cable changes. A real signal booster for any Amateur exciter or transceiver available in VK. Simple to connect, easy to tune. Fully metered. Fan cooled. £139 ($278).

Australian Agents: **BAIL ELECTRONIC SERVICES**
60 Shannon St., Box Hill Nth., Vic. Ph. 89-2213

VK2 Rep.: **MOSMAN RADIO SERVICES**
11 Ruby St., Mosman, N.S.W. Phone 96-5342

• DISPOSAL BARGAINS •

AT OUR BULK DISPOSAL STORE

8 PARK STREET, GLENFERRIE, VIC. (OFF GLENFERRIE ROAD)

Phone 81-1935 **(Mon. to Fri., 10 a.m. to 5 p.m.; Sat., 10 a.m. to 12.30 p.m.)**

CABLES

2-core, shielded, new, 20c yard.
12-core, shielded, new, 40c yard.
3-core, plastic covered, new, 20c yard.
4-core, plastic covered, new, 25c yard.
6-core, plastic covered, new, 30c yard.

DRIVER AND OUTPUT TRANSFORMERS

Transistor type RL8, Driver Transformer, 3000 to 1330 c.t. Transistor type JK8 Output Transformer, 300 c.t. to 15. Physical size: height 1⅝ in., depth 1⅝ in., width 1⅝ in. 10/- ($1) each, or 17/6 ($1.75) per pair.

ROTARY WAFER SWITCH

1 pole 24 position 3 bank. Physical size: 3 x 3 inch. Price 30/- ($3.00).

SWITCH BOARD

Completely wired, Type F. & F. T.M.C. C unit. Contains 28 key switches, 26 P.M.G. Plugs, 24 Drop Latches, hand-operated Genemotor for ringing. Size 20 in. wide, 18 in. deep, 21 in. high. Weight 60 lbs. Price $25.

DISPOSAL METERS

G.E.C. Panel Meters, 50 mA., 3¼ inch round, 2⅛ in. round mounting hole. Brand new, $1.75

NEW CONDENSERS

M.F.D.	Volts	Price	M.F.D.	Volts	Price
2	22	35c	50	150	75c
4	3	30c	50	350	$1.35
5	6	30c	50 pl. 50	350 Can	$1.60
5	12	30c	50	450	$1.35
5	18	35c	64	6	35c
8	10	30c	64	18	35c
8	15	30c	100	3	35c
8	350	48c	100	6	35c
8	525	58c	100	12	35c
10	3	30c	100	25	50c
10	6	30c	100	50	75c
10	15	35c	100	100	75c
10	25	35c	100	200 Can	$1.05
16	10	35c	100	300	$1.53
16	300	50c	100	350 Can	$1.60
16	525	75c	125	3	35c
20	200	62c	150	150	75c
24	350	65c	200	25	05c
24	500	97c	200	50	90c
25	3	32c	250	3	50c
25	6	35c	250	6	55c
25	12	35c	250	16	55c
25	18	35c	250	25	75c
25	25	35c	250	50	95c
25	50	45c	500	12D	50c
25	300	62c	500	25	88c
25	600	98c	500	50	$1.25
30	6	35c	1000	6	92c
30	12	35c	1000	12	$1.05
32	350	70c	1000	25	$1.45
50	6	32c	1000	15	$1.48
50	12	35c	2000	18	$1.70
50	25	47c			

SPECIAL BARGAINS

Block Condensers, 2 mF./2500 v.w. ... $2.50
(Pack and Post 25c.)
DC Crystal Holders, new, less crystal, 75c.
Carpenter Relay and Socket, Type 3E1, 1600T 250 ohms, 900T 200 ohms, $1.50.
P.M.G. Strip Boards, containing 24 Jacks, $3.
P.M.G. Strip Boards, containing 48 Jacks, $5.
Headphone Cords, new, 45c pair.
3-pin Plug with two yards Cord, 45c.
Bags of Mixed Resistors (50), $1.25 bag.
P/M Fuse Holders, 45c each.
72 ohm Co-ax Cable, 35 ft. lengths, 3/16 inch diameter, $1.
72 ohm Co-ax Cable, 27 yard lengths, 3/16 inch diameter, $2.
Vibrators, 122 Type, $2 each.
122 Aerial Packs, $6 each.
12-core Cable with Plug, 22 yards long, $5.
Dural Tubing, 12 ft. lengths, ¼ inch diameter, three for $2.
P.M.G. Key Switches, 75c each.

GLIDE PATH RECEIVERS

Type 733D, complete with valves and Crystals ... $10.00
(Pack and Post $1.00.)

TRANSISTOR TRANSFORMERS

Output type, 300 ohms c.t., 15 ohms, $1 each.
Driver type, 3000 ohms c.t., 1330 ohms, $1 each.

ROTARY TRANSFORMER MOTORS

Type X21010, new. Input 19 volts, output 370 volts at 70 mA. Size 6½ in. long, diam. 2¼ in.
Price $4.50

BATTERY CHARGERS

Dual, c/w. Meter in Metal Hammertone Case

6 volt 4 amp., 12 volt 4 amp. ... 157/6 $15.75
6 volt 6 amp., 12 volt 6 amp. ... 217/6 $21.75

CHASSIS PUNCH SET

Hozan K-83, sizes 16, 18, 21, 25 and 30 mm. Complete with taper reamer in wooden storage box 70/- $7.00

P.M.G. TYPE

Standard Rack. 19 inch panels and chassis. All sizes. Plenty to choose from. Personal shoppers only.

ROTARY SWITCHES (JABEL)

3-pole, 3-position ... 10/- $1.00
4-pole, 3-position ... 10/- $1.00
2-pole, 6-position ... 10/- $1.00
1-pole, 12-position ... 10/- $1.00

T.V. PROBES

American Precision, TV-5B, 450 Mc., 30,000 volt. Brand New carton. $8. 12 only.

PP/439/APG-30 POWER SUPPLY

Radar type, new. Contains 36 valves—8 6AQ5, 5 6X4, 4 12AX7, OA2, 2 6AK5, 3 6AL5, 2 12AT7, 2 2D21, 6AS6, 4 2C51, 2 6J6, 6AG5, 2 0AH6. Also twin 28v. blower motor, relays, variable conds., transformers, etc. 28v. 500 cycle. Ideal for wrecking. Sorry, no further information. Brand New. $35.

STEEL TRANSFORMER BOXES

8¼ x 9 x 5 inch with matching lid, air vents each end. Ideal for battery charger, etc. Unpainted, new. $1. Discount for quantity.

DURAL TUBING

¼ inch Tubing. 6 ft. lengths 36 ft. for $2 or 40c per 6 ft. length.

POTENTIOMETERS

Wire Wound, 4 Watts, 1¾ inch diameter.
Sizes available: 5, 10, 25, 50, 250, 500, and 50K ohms, 4/- each.

NEW CHANNEL LOCK PLIERS

Type 337W ... 20/- each
Type 356 End Cutters ... 20/- each

MAGNETIC RELAYS

Sealed Type
24 volt, 670 ohms, D.p.d.t., size 2 x 1½ inch, Price 15/- ($1.50).
24 volt, 700 ohms, D.p.d.t., size 1½ x 1 inch, Price 15/- ($1.50).

MODULATION AND DRIVER TRANSFORMERS

Modulation Transformer, 15 watts, pair of 6AQ5s to 2E26 valve.
Also Driver Transformer, single ended primary to push-pull grids of 6AQ5s.
£2 the lot, or Mod. Trans. 30/-, and Driver Trans. 10/-.

BRACKET BEZAL LAMPS

⅛ inch diam. Bezal in Red, Amber, Green. Suit screw type globe. 35c, 4 for $1.20.

CRYSTALS

HC6/U or HC18/U holders.
27.240 Mc., new, $3.
28.785 Mc., new, $3.
Frequencies available: 4852, 5680, 4735, 5205, 5780, 4840 and 5397 Kc. Three for $2.

CONDENSERS

50 uF., 200v., pigtail ... 20c ea., $2 dozen
500 uF. 12v., pigtail ... 20c ea., $2 dozen
12 uF. 50v., pigtail ... 20c ea., $2 dozen
3 uF. 100v., pigtail ... 10c ea., $1 dozen
10 uF. 25v., pigtail ... 10c ea., $1 dozen

HAM RADIO SUPPLIERS

5A MELVILLE ST., HAWTHORN, VIC. Phone 86-6465
8 PARK STREET, GLENFERRIE, VIC. Phone 81-1935